DOCUMENT RESUME

ED 023 268 EF 001 993

By-Froomkin, Joseph

Students and Buildings. An Analysis of Selected Federal Programs for Higher Education. Planning Papers of the Office of Program Planning and Evaluation, Office of Education.

Department of Health, Education and Welfare, Washington, D.C.; Office of Education (DHEW), Washington, D.C.

Spons Agency-Department of Health, Education and Welfare, Washington, D.C.

Report No-OE-50054; PP-68-2

Pub Date May 68

Note-76p.

Available from-Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402 (FS5.250:50054, 55 cents)

EDRS Price MF-$0.50 HC Not Available from EDRS.

Descriptors-*Construction Programs, Data Analysis, *Educational Facilities, *Federal Aid, Financial Support, Graduate Study, *Higher Education, Student Loan Programs, Undergraduate Study, Veterans Education

The operation of Federal programs for student aid and facilities construction in higher education is examined in detail. Among the topics treated are the growth of higher education in the past decade, undergraduate and graduate student aid, proposed forms of student aid, aid for facilities construction, and projection of requirements for major higher education programs. Included are a technical appendix which defines the formulae used for enrollment projections by type of institution, and an appendix of statistical summaries of student costs, financial aids, and enrollment projections plus facilities construction aids identified by specific federal agency sources of funds provided. (NI)

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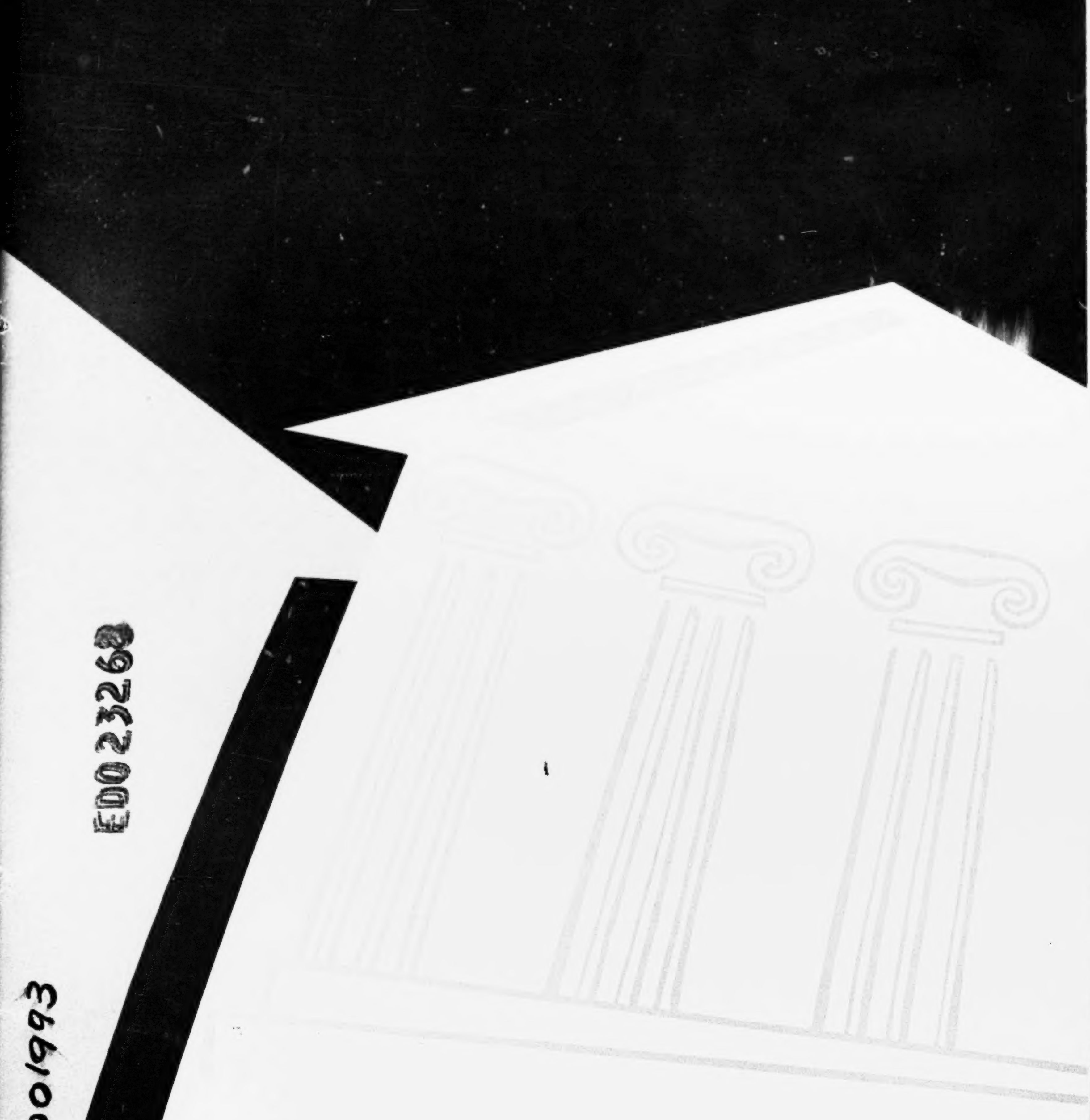

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An Analysis of Selected Federal Programs for Higher Education

OE-50054

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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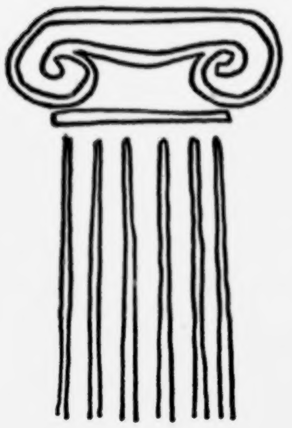

AN ANALYSIS OF SELECTED FEDERAL PROGRAMS FOR HIGHER EDUCATION

Planning Papers of the
Office of Program Planning
and Evaluation,
Office of Education

Planning Paper 68–2

U.S. Department of Health, Education, and Welfare
Wilbur J. Cohen, *Secretary*

Office of Education
Harold Howe II, *Commissioner*

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U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1968

Superintendent of Documents Catalog No. FS 5.250:50054

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 - Price 55 cents

Preface

The analysis of selected Federal programs for higher education was prepared for an *ad hoc* program analysis group appointed by the Secretary of Health, Education, and Welfare on March 2, 1967. The report below, like all pioneering attempts, is probably more interesting as a methodological exercise than as a precise measurement of the impact of different programs. It is hoped, though, that the present analysis will point the way to solving some of the more vexing data problems in one major area of public investment.

This paper is not truly the result of a consensus of a committee, nor can it be taken as an official view of the Office of Education. It is an input to policymaking by the Office of Program Planning and Evaluation (OPPE).

Many useful critical comments were received from readers of an earlier draft. The present version is, we believe, much improved as a result of those comments. However, for the sake of cohesion, we did not reflect and note all the reservations voiced in connection with our findings. For example:

> We were criticized for adopting a projection of future enrollments, different from the one published by the U.S. Office of Education, National Center for Educational Statistics; for not dealing with all forms of postsecondary education; and for slighting the role of part-time study and nondegree enrollment, and the like.
>
> Others cautioned us about using preliminary tabulations of student aid.
>
> Still others dissented from our findings about the program to aid developing institutions. Especially in connection with this program, it was pointed out that our conclusions were probably premature because upgrading the educational quality of an institution takes a great deal of time.
>
> Our analysis of Talent Search and Upward Bound was also criticized as flying in the face of conventional wisdom.
>
> Finally, it was pointed out to us that the anticipated decline in private support for graduate study is not adequately reflected in our analysis and that the crisis of graduate education may be more serious than our projections indicate.

We would welcome additional comments from our readers to improve the next year's version of our analysis paper.

The paper was prepared by the undersigned with the assistance of James Byrnes, Penrose Jackson, and Mrs. Cora Beebe. Gerald Weber, then of the staff of the Assistant Secretary for Planning and Evaluation and now at the Brookings Institution, assisted in devising the model for enrollments by socioeconomic group. Murray Pfeferman, now with OPPE, and then on the staff of the Comptroller of HEW, helped us with the programing of the model. We wish to take this opportunity to thank personnel from the Bureau of Higher Education and the Educational Testing Service for providing and processing the data on student aid. In addition, we wish to thank the Associated Consultants in Education, Florida State University, for their assistance in analyzing the Higher Education Facilities Act.

JOSEPH FROOMKIN,
Assistant Commissioner for
Program Planning and Evaluation.

Contents

Page
PREFACE iii
CHAPTER 1.—Summary 1
CHAPTER 2.—The Problem 5
CHAPTER 3.—The Growth of Higher Education in the Past Decade 7
CHAPTER 4.—The Higher Education Model 12
CHAPTER 5.—Undergraduate Student Aid 16
Present Programs of Student Aid 17
Proposed Aid to Students 20
CHAPTER 6.—Graduate Student Aid 25
CHAPTER 7.—Aid for Facilities Construction 29
CHAPTER 8.—Other Federal Programs Serving Lower-Income Students 32
CHAPTER 9.—Projection of Requirements for Major Higher Education Programs 37
TECHNICAL APPENDIX 45
STATISTICAL APPENDIX 49

Text Tables

1. Major changes in the postsecondary educational system: United States, 1955–56 to 1965–66 7
2. Ratio of undergraduate enrollment to the eligible population age 18–24: United States, 1955 and 1964 8
3. Revenue of institutions of higher education by type of revenue: Academic years 1955–56 and 1965–66 9
4. Average current fund revenue per full-time equivalent student and estimated average charges per full-time resident degree student by control: 1955–56 and 1965–66 10
5. Expenditures of institutions of higher education by type of expenditure: Academic years 1955–56 and 1965–66 10
6. Percentage of students entering college during the first year following high school graduation by socioeconomic status: High school class of 1961 12
7. The gap between estimated total family contributions for the college education of their child and the total costs of alternative enrollment patterns by socioeconomic status quartile for 1966, 1968, and 1972 15
8. Student costs of higher education relative to family income 16
9. Average family income, average student cost, average family contribution, and average annual financial need for degree-credit undergraduates at all institutions of higher education by size of family income: 1966–67 17
10. Undergraduate student financial need and funds extended under major student aid programs by student family income: 1966–67 18
11. Funds disbursed under current student aid programs and estimated cost of proposed programs by student family income: 1966–67 22
12. Federal support for graduate students, estimates by agency: 1966–67 25
13. Source of income of graduate students, 1965 26
14. Mean Federal expenditure for student aid per degree granted, 1964 28
15. Federal programs which provide assistance to higher education institutions for construction and rehabilitation projects 29
16. Potential share of students aided by removal of financial barriers and residual share who will not attend college because of the lack of motivation, by family socioeconomic status quartiles 32
17. Students who fail to enroll because of motivation, as a percent of all students who fail to enroll, by achievement quartiles for third and low socioeconomic status quartiles 33
18. Total student aid requirements, Office of Education, 1968–69 and 1972–73 39
19. Projected institutional deficit on current educational account: 1968–69 and 1972–73 40
20. Ratio of student spaces to number of students enrolled for public and private institutions by size of enrollment 42
21. Estimated higher education enrollment per 1,000 of total population in standard metropolitan statistical areas: Fall 1965 43

Appendix Tables

Page

A–1. Number of postsecondary institutions by type and control: 1955 and 1965 51

A–2. Total opening fall degree-credit enrollment by type of institution and control: 1955 to 1965 51

A–3. Total opening fall degree-credit and nondegree enrollment by level and type of control: 1955 and 1965 51

A–4. Number of earned degrees by level and field: 1955–56 and 1965–66 52

A–5. Number of full-time, part-time, and estimated full-time equivalent professional staff employed in institutions of higher education: Fall 1955 and 1965 .. 52

A–6. Revenue of institutions of higher education by type of revenue and control: Academic years 1955–56 and 1965–66. 53

A–7. Expenditures of institutions of higher education by type of expenditure and control: Academic years 1955–56 and 1965–66 54

A–8. Probability of a high school graduate entering college in the year following graduation by family socioeconomic status quartile, student achievement quartile, and sex: High school class of 1961 55

A–9. High school graduates by family socioeconomic status quartile, achievement quartile, and sex: High school class of 1960 55

A–10. Percentage of students entering college during the first year following high school graduation by socioeconomic status quartile and high school achievement quartile: High school class of 1961 55

A–11. Probability of full-time undergraduate degree-credit enrollment for high school graduates by number of years since high school graduation: Average 1964 to 1966 55

A–12. Relative differentials in the probability of college enrollment for high school graduates by family socioeconomic status quartile and high school achievement quartile: High school class of 1961 56

A–13. Percentage of 1st-time enrollment by type of institution, student socioeconomic status quartile, high school achievement quartile, and sex 56

A–14. Average annual costs of attending college per full-time student by type of institution: 1966 57

A–15. Actual annual contributions of families to college expense financing, by net income range 57

A–16. Alternative full-time degree-credit undergraduate enrollment patterns based on three different assumptions of possible trends by socioeconomic status in 1966, 1968, and 1972 57

A–17. Alternative full-time degree-credit undergraduate enrollment patterns based on three different assumptions of possible trends by achievement level in 1966, 1968, and 1972 58

A–18. Undergraduate student financial need and average amount per recipient extended under major student aid programs, by student family income quartile: 1966–67 58

A–19. Percentage distribution by source of funds for undergraduate student financial need, by student family income quartile: 1966–67 59

A–20. Per capita undergraduate student financial need and source of funds, by student family income quartile: 1966–67 59

A–21. Number of undergraduate students receiving student aid by major program and student family income quartile: 1966–67 59

A–22. Tax-credit proposals for expenditures on tuition and books 60

A–23. Estimated benefits from Ribicoff and Prouty proposals for full-time undergraduates by family income quartile: 1966–67 60

A–24. One thousand dollars taxable benefits to parents of full-time students and net after-tax benefits by income quartile 60

A–25. Estimated cost of Federal scholarships to cover the difference between college costs and college scholarship service standards for family contributions: 1966–67 61

Page

A-26. Percentage of undergraduate student aid funds extended under major student aid programs by student family income quartile: 1966-67 61

A-27. Full-time undergraduates, potential additional students, and additional student aid required, 1966-67 61

A-28. Adjusted per capita undergraduate student financial need and funds extended under major student aid programs, by student family income quartile: 1966-67 61

A-29. Differences in median income between persons with college training and persons with four years of high school only by age, sex, and level of college training: 1965 62

A-30. Graduate student stipends, by source of funds: 1963-64 and 1966-67 62

A-31. Stipends required to induce part-time graduate students to attend school full-time (1963) 62

A-32. Behavior of graduate students and availability of stipends 63

A-33. Time lapse between baccalaureate and doctorate degrees in 10 fields: Mean number of years and standard deviations for each decade 1920-1960 64

A-34. Number of NDEA fellowship awards by year of award, period awarded, and attainment of Ph.D. status 65

A-35. Earned degrees, by type: Percentage distribution 1920 to 1970 65

A-36. Assignable area and funds disbursed under the Higher Education Facilities Act of 1963 by type of institution: Fiscal years 1965 and 1966 65

A-37. Assignable area and funds disbursed under the Higher Education Facilities Act of 1963 by control and type of institution: Fiscal years 1965 and 1966. 66

A-38. Number of institutions, full-time equivalent enrollment, and funds disbursed under titles I and II of The Higher Education Facilities Act of 1963 by size of institution: Fiscal years 1965 and 1966 66

A-39. Approvals and disapprovals under title III, HEA, by character of school 67

A-40. Summary of fiscal year 1966 and fiscal year 1967 activity under title III of the Higher Education Act of 1965 67

Page

A-41. Number of developing institutions, number of students, and funds disbursed under title III of the Higher Education Act of 1965 by type of institution, expenditure per student, and tuition: Fiscal year 1966 68

A-42. Number of developing institutions, number of students, and funds disbursed under title III of the Higher Education Act of 1965 by type of institution, expenditure per student, and tuition: Fiscal year 1967 69

A-43. Per capita undergraduate student financial need and funds extended under major student aid programs, by student family income quartile: 1968-69 medium projection 70

A-44. Per capita undergraduate student financial need and funds extended under major student aid programs by student family income quartile: 1972-73 medium projection 70

A-45. Undergraduate student financial need and funds extended under major student aid programs by student family income quartile: 1968-69 medium projection .. 70

A-46. Undergraduate student financial need and funds extended under major student aid programs by student family income quartile: 1972-73 medium projection .. 71

A-47. Per capita undergraduate student financial need and funds extended under major student aid programs by student family income quartile: 1968-69 maintenance of effort 71

A-48. Per capita undergraduate student financial need and funds extended under major student aid programs by student family income quartile: 1972-73 maintenance of effort 71

A-49. Undergraduate student financial need and funds extended under major student aid programs by student family income quartile: 1968-69 maintenance of effort 72

A-50. Undergraduate student financial need and funds extended under major student aid programs by student family income quartile: 1972-73 maintenance of effort 72

A-51. Graduate student support requirements 72

1. Summary

The analysis paper on higher education examines in some detail the operation of Federal programs for student aid and facilities construction and briefly appraises two innovative programs: (1) The college-recruitment of children from disadvantaged backgrounds and (2) the aid to developing colleges.

Introduction.—At the very outset the reader is cautioned that a quantitative analysis of higher education may easily miss the substance of the exercise: measuring the contribution of the Federal Government to the pursuit of knowledge at the postsecondary level. Federal programs to date have not addressed themselves to a number of important issues facing the higher education community such as, the effect of mass education on the quality of instruction, the role of the mass college, changes in the curriculum to accomodate broader strata of students, and the effect of college education on student values. The higher education community is presently under considerable pressure to reexamine its values. During this period the country's young college and university system should be treated with care.

Developments during the past 10 years.—Recent growth in postsecondary education has been staggering. Enrollments more than doubled during the past 10 years. Income and expenditure tripled. Instructional staff came close to doubling. The number of nonteaching professionals in higher education increased by more than two and a half times between 1955 and 1966 (see table 1).

During the past decade the Federal Government's main impact on institutional finances was exerted in research. The amount expended by institutions of higher education on organized research quadrupled, growing from about a half a billion dollars in 1955–56 to over $2 billion in 1965–66.

Another striking development during the past decade was the rapid decline in the position of the private college and university in the postsecondary marketplace. Private institutions lost 10 percent of the market to public institutions. By 1965–66 about 34 percent of all students attended privately sponsored schools, as contrasted to 44 percent a decade earlier. While attempting to finance increasing enrollments with higher tuition rates, private institutions failed to create or fill up a sufficient number of new spaces to keep up with increased enrollment in public institutions. Increasing costs, which rose faster at private than at public institutions, are much to blame for this development. Faculty salaries rose faster at private institutions than at public institutions, and student/faculty ratios rose faster at public institutions than at private.

During the decade postsecondary institutions increased the rate at which they absorb eligible students by 11 percent. Close to 40 percent of all eligibles in the population attended postsecondary institutions in the mid-1960's (see table 2, p. 8). Junior colleges contributed significantly to the creation of new student places.

Undergraduate enrollments.—Previously, estimates of the socioeconomic composition of the undergraduate population, projections of the changes likely to occur in the socioeconomic composition of the college population, and data on how this composition could be affected by Federal student aid programs have not been available.

A new set of estimates, developed for this analysis paper, indicates that in the mid-1960's about 40 percent of the freshmen entering college consisted of children of parents in the upper socioeconomic quartile. About 48 percent of all students in college were from this group. By contrast, about 11 percent of all freshmen belonged to the lowest socioeconomic quartile, and less than 7 percent of the entire college population belonged to that group. The children of lower-income parents are less likely to enroll in college and are more likely to drop out of school than their more fortunate peers.

The model developed for this paper projects an increase by 1972–73 of 1.1 million full-time undergraduates as a result of the removal of financial constraints (medium projection). It places full-time degree-credit enrollment at 6.2 million. The higher income group's share of college population would drop to 40 percent for that model. Attendance from the lower-income quartile would increase to a little over 9 percent. The removal of financial constraints would benefit the middle classes the most. Nevertheless, 200,000 more children of lower-income parents could attend postsecondary schools by 1972–73. The low gains in the percentage of children from the lowest socioeconomic quartile are due to (1) their poor high school preparation, and (2) their low motivation for attending college.[1]

Student financial need was calculated by estimating the costs of attending different types of colleges, now and in future years, and subtracting the average family contribution for each income quartile. The estimates of the financial gap for different enrollment assumptions, reproduced in table 7, indicate that the gap will increase by $0.9 billion between 1966–67 and 1968–69 in the event enrollment grows at the rate anticipated by the no-financial constraint (medium) projection, and will double by 1972–73, reaching over $4 billion.

Undergraduate student aid.—During the 1966–67 school year, approximately $1.2 billion was provided for undergraduate student aid. Of this amount, roughly $1 billion came from Federal sources. The Veterans Administration provided $157 million, and the rest came mainly from programs administered by the Office of Education. The distribution of student aid by source and by family income quartile is reproduced in table 10.

For the students in the lowest income quartile, 94 percent of the need was covered by present aid programs: 67 percent of the total need was covered by grants and work-study, and 27 percent by loans. The remaining 6 percent was covered by other sources. Students in the third quartile were not supported as heavily by institutional and Federal programs—only 38 percent of their need was covered by formal aid programs, and 18 percent was covered by loans. In the second highest income quartile, 31 percent of the need was covered by formal aid programs, of which roughly half came from loans. Some $232 million of student aid, most of it loans, was distributed to students in the upper income quartile. Since the lowest income limit for that quartile is $10,000, it is likely that children of parents with numerous offspring qualified for some outright aid and that many others used loans to finance their education at more expensive institutions than they would have otherwise attended.

To summarize, if the students from the bottom quartile were served somewhat more comprehensively by the present programs, this was due in large measure to their willingness to borrow. On the whole, though, Federal programs seemed to favor students with poorer parents and thus fulfilled their stated objectives.

The present mix of Federal programs favors the lower-income groups much more than most proposals for financing college attendance. The analysis of the Ribicoff and Prouty proposals [2] to allow parents to deduct a portion of college costs from income and the proposal to give flat grants, which would then be taxable to parents, to postsecondary students shows that both proposals would favor the higher-income groups to a disproportionate degree. A comparison of the distribution of the beneficiaries and benefits of these programs by income quartile appears in table 11.

No estimates of the effect of a conditional repayment plan could be made by this study. The nature of such a plan makes this impossible. Once the terms for conditional repayment are established, self-selection of participants would make the plan non-self-sustaining.

It appears that student aid provided by existing programs took care of about half the students' needs and that students filled the rest of the gap by part-time work and possibly by drawing on the savings of their parents. Tentative estimates indicate that enrollment of freshmen in 1966–67 was about 100,000 above the trend.

Graduate student aid.—Since graduate enrollments increased at a faster rate than undergraduate enrollments in the past few years (even after the time trend is taken into account), one can only conclude that the amount of graduate student aid was at least as nearly adequate in relation to need as undergraduate student aid. Total Federal aid to graduate students in 1966–67 amounted to close to half a billion dollars. Of this amount roughly one-fourth came from Office of Education sources (see table 12).

The analysis indicates that the availability of aid did have an influence upon students' decisions to continue graduate education: at least in those disciplines in which abundant aid was available more bachelor degree students continued their education within 5 years of their graduation from college. Degree production was also speeded up in those disciplines in which generous aid to graduate students was available.

A preliminary analysis of degree production by holders of National Defense Education Act (NDEA) fellowships indicates that the majority of doctoral degree recipients did not finish their studies during the period the fellowship was available. An analysis of the speed with which NDEA fellowship holders received their degrees, compared to non-fellowship holders, is not available at this time.

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[1] These results were derived from a model which takes into account academic attainment in high school, motivational factors, and dropout rates differentiated by socioeconomic group and high school achievement. The model is described in ch. 4.

[2] For details on the proposals by Senators Ribicoff and Prouty, see appendix tables A–22 and A–23.

An analysis of Federal expenditure per degree recipient in 1966–67 shows that Federal subsidies were concentrated in the natural sciences, where the expenditure per degree awarded was 28 times what it was in the field of education (see table 14).

Aid for facilities construction.—The Higher Education Facilities Act of 1963 was passed to help postsecondary institutions meet the costs of constructing sufficient facilities to cope with rising enrollments. Federal aid for construction has remained at a steady 20 percent of total construction costs since the 1963 act. As more aid became available, construction picked up.

In general, the effect of the act has been to correct deficits in space accumulated between 1957 and 1965. Federal money was allocated more generously to junior colleges—the fastest growing and poorest segments of the postsecondary community—where the floor space per student had declined to half that available in universities and where construction supported by the act will bring the ratio up to 60 percent.

The distribution of the grants under title I was roughly proportional to the distribution of undergraduate students in private and public institutions. Roughly one-third of the money went to private and the rest to public institutions. The same observation could be made about funds distributed under title II: 40 percent of the funds went to private institutions, again roughly in proportion to their share of graduate students enrolled. Title III, the loan title, was used mostly by private institutions, which took 83 percent of the loans.

Generally, the program has been well received by the participants, who feel that it is contributing to the solution of their enrollment growth problems.

Other Federal programs serving lower-income students.—Removal of financial barriers will not fully equalize the college attendance patterns of the rich and poor. In the deprived group, about three times (25.8 percent of the high school graduating class) as many children are kept from attending postsecondary institutions by financial and motivational factors jointly as by financial factors alone (7.2 percent). In the third lowest income quartile, about equal numbers of children (13 and 18 percent of the graduating class) do not attend postsecondary institutions for these two reasons.

Two programs, Upward Bound, administered by the Office of Economic Opportunity, and Talent Search, funded by the Office of Education, are designed to motivate poor children to go to college. Of the two, Upward Bound is more intensive. Children selected in the 10th grade attend two or three summer school sessions and benefit from counseling during their last 2 years. About 80 percent of the graduates of the first program entered college. More than half dropped out by the beginning of the sophomore year.

These results are not surprising. The students were chosen from among the lowest achievers in their class. They are typical of persons in the college-age group, generally low achievers, who do not enroll in college because of lack of motivation (see table 17).

Only a small proportion of Upward Bound students are likely to graduate from college. This is especially unfortunate since statistics indicate that low-achieving students, especially from minority groups, do not attain significantly higher income levels unless they complete the full course of study.

By contrast, most of the Talent Search programs are much less intensive and are directed to a broader spectrum of students. Since more of the students in the third qurtile of the population who do not enroll are likely to be better college material, Talent Search appears to be the more attractive program. The program has not been in operation long enough to permit any conclusions as to its effectiveness.

It is recommended that additional funds for recruiting undergraduates from poor families be closely tied to the availability of student aid. If more money than the amounts which are projected under the medium assumption can be allocated to student aid, recruitment efforts can be stepped up. Until the money is available, both Talent Search and Upward Bound should remain experimental programs.

A brief analysis of the Developing Institutions Program authorized by title III of the Higher Education Act of 1965 indicates that many of the schools aided have such serious weaknesses that little improvement can be expected. It is recommended that available aid be more concentrated and used to encourage consolidation of small colleges, promote integration of students, and to help in development of low-cost junior colleges.

Projection of requirements for selected programs.—Required funding levels are projected on the basis of enrollment projections. Several enrollment projections have been developed:

1. *Low*, representing continuation of the present enrollment patterns without Federal student aid.
2. *Medium*, based on the removal of financial barriers.
3. *Maintenance-of-effort*, an average of the low and medium projection, roughly corresponding to

present enrollment patterns with present aid programs.

4. *High*, based on the removal of both financial and motivational constraints.

The medium and maintenance-of-effort projections are discussed below.

According to the calculations developed in the paper, Federal budgetary allocations for fiscal year 1969 would have to be some $150 million above the 1967 level for the maintenance-of-effort projection and $500 million for the medium projection. By 1973, the student aid budget would have to double, to $1 billion, under the maintenance-of-effort projection and increase 4 times, to $2 billion, for the medium projection (see table 18).

The increase in full-time equivalent enrollment of 21 percent over the 1966 fall enrollment by fall 1969, and 47 percent by fall 1973, would place a considerable strain on postsecondary education finances (see table 19). For instance, the projections indicate that the State contribution to the current operating funds of colleges and universities would have to increase by close to $2 billion. This means that State support to current budget will have to grow in the next 5 years by the same amount their contribution grew in the past 10. Private schools and universities, if past trends continue, will continue losing their share of the total student enrollment, but at a decreasing rate.

The moot point is whether the present rate of increase in non-Federal contributions to current funds will continue. If it does, higher education will not face a financial crisis. If absolute amounts rather than rates are examined, it is possible to conclude that higher education is facing a financial crisis. Part of that crisis, if it develops, is likely to be solved by raising tuition.

It is estimated that by 1972–73 about 18 percent of the enrollments in higher educational institutions will directly result from Federal subsidies to students. Thus, in 1972–73 a deficit of about $1.4 billion on current account will be caused by Federal aid programs. It is clear that greater Federal support will be needed if this deficit is to be met and the present movement to equalize opportunity for higher education is to continue.

The examination of current student aid programs indicates that they meet the goal of equalizing educational opportunity more effectively than competing proposals would. Therefore, given tight Federal budgets, it is recommended that the present aid programs be continued.

In a more liberal funding situation it may be preferable to stave off large tuition increases by enacting legislation for general institutional aid with grants to colleges and universities at the rate of $75 per student and 5 percent of the educational cost. The cost of this program would be $1.1 billion, roughly the amount of the institutional deficit due to increased enrollment caused by student aid.

In the area of construction, capital requirements should be moderated considerably due to the somewhat smaller rate of increase in full-time equivalent enrollment projected for 1972–73 as compared to the increase of nearly 75 percent from 1960 to 1966. Except for the developing institutions, the current rates of aid for facilities should be adequate.

2. The Problem

A quantitatively oriented analysis paper on higher education such as this one may easily miss the substance of the exercise: measuring the contributions of Federal programs to the pursuit of knowledge at the postsecondary level. This type of analysis generally leaves out any discussion of quality. Social scientists have been particularly unsuccessful at measuring quality. In many instances, the market mechanism also measures this variation ineptly. For example, a professor at Parsons College may be paid more than a professor at Swarthmore; yet the contribution of the former to intellectual life may easily be much less than that of the latter. Hence, a sense of balance must be maintained in the formation of national policy if we are to avoid downgrading the level of intellectual life.

This balance will be extremely difficult to maintain because education beyond high school is rapidly becoming the norm rather than the exception in American society. About 50 percent of high school graduates enroll in conventional institutions of higher learning. Another 15 percent of male high school graduates are likely to attend some type of institution oriented to the production of specific occupational skills. Thus, it is incorrect to call all postsecondary activity "higher education" because much of it is vocational and trade oriented.

The great flexibility and freedom of choice inherent in the postsecondary educational system make it difficult to distinguish between these two streams. Some of the high school students who enroll in conventional colleges do not graduate, but content themselves with less than 4 years of college. This adds something to their desirability as future employees. Others start in vocational courses, but switch to academic courses and complete 4 or more years of education. This lack of structure is a striking feature of the American system of higher education. Numerous students drop in and out of the academic stream practically at will. It is significant that 25 percent of the students who receive 4 or more years of postsecondary education complete their fourth year after their 30th birthday. In the light of this fact the problems of the postsecondary educational establishment take on an unusual dimension in the United States.

Postsecondary enrollments increased more than two times between 1955 and 1965 and are expected to increase 50 percent in the period 1965–75. In effect, higher education is undergoing the same transformation in the 1960's that secondary education experienced in the 1940's. It is changing its character from a class to a mass experience. This transformation is not painless. It has put unprecedented strain on both institutions and students in financing higher education, affecting the whole character of the postsecondary educational system.

Private colleges, which provided the bulk of higher-quality education before 1950, have been losing part of their share of the higher education market. At the same time, two offsetting developments have occurred among public institutions. Some of the better-established public institutions have noticeably upgraded their standards for admission and instruction. And a new set of institutions has been established to accept students with lower academic achievement as well as to provide shorter periods of vocational education.

The principal social dilemma of the new structure of postsecondary education is that individual opportunity is still imperfect. Children whose parents are of above-average socioeconomic status (SES) and who graduate in the top half of their high school class generally attend the higher-quality 4-year colleges. By contrast, a much smaller proportion of equally able children whose parents have a lower SES attend those institutions. Many lower-status students are channeled to 2-year institutions, which are thus faced with the dual task of housing the academically inept and motivating the poor but academically gifted to continue their education.

Cyril Connally has aptly stated that mass education—like mass cooking—seldom results in quality. The wave of enrollments demands measures for the preservation of quality under the pressure of quantity. Among the results of this pressure are new patterns in the undergraduate curriculum. As the number of academically less sophisticated students increases, the fundamental characteristics of the elitist system—the menu of choice of electives so characteristic of American colleges—has begun to be questioned. New patterns stress a unitary curriculum oriented toward broad educational or vocational concerns.

The organization of the college itself is undergoing considerable change. In some institutions, in order to counteract the anomie produced in large nonresidential schools, small groups of students have been formed to assist one another throughout their college career. These experiments are generally no more expensive than conventional arrangements. They merely require a certain amount of planning and imagination. In all probability such changes could be more productive if the various colleges which attempted new approaches benefited from one another's experience. For example, the dangers of a track system similar to that used by some high schools should be examined closely before adoption by postsecondary insititutions.

The whole issue of the role of the mass college has received increasing attention in the literature but little systematic analysis. Two features of the mass institution have caused considerable conflict between the students and the administration. On the one hand, the pressure to establish a more efficient sausage machine to produce graduates at the end of a prescribed time cycle has resulted in the assignment of curriculum to match the abilities of students as shown by objective tests. On the other hand, the student who is being directed to a channel in which he cannot fail is generally not challenged sufficiently. Students are thus unhappy. At least one-half of the dropouts in postsecondary education are caused by unsuitable programs, not by financial or academic difficulties.

As more and more students are pressured by the social environment to attend postsecondary courses, the problems of designing curriculums to meet the objectives of the higher-education establishment as well as the aspirations of the students are not likely to be solved easily.

The current curriculum has been weighed and found wanting by a number of social scientists who want colleges and universities to affect the value systems of students. They have found that neither teachers nor textbooks have much effect. Whatever value-scale changes occur in students will take place as a result of interaction with their peers or of travel and exposure to new situations. Our colleges, it must be realized, are machines which impart skills and facts, rather than institutions designed to produce leaders or the elite.

After all is said and done, qualitative changes nevertheless have occurred in American postsecondary education in the last half century. Fifty years ago, this country did not have a single calculus text written in English. Fifty years ago most doctorates in sciences were obtained abroad. Last year over 2,000 Ph. D.'s in engineering were awarded. A scientific elite has been built which makes the United States a center of graduate study. The leadership of our universities in most fields is impressive. We must not let the babble of voices of students who seek admission drown out the intellectual dialog in our universities.

This analytical paper, therefore, addresses the problem: What resources, especially Federal resources, will be needed in the next 5 years to democratize postsecondary education and also maintain its excellence?

3. The Growth of Higher Education in the Past Decade

Postsecondary education is a growth industry. Enrollment more than doubled during the past 10 years. Income and expenditures more than tripled. Instructional staff came close to doubling. The number of nonteaching professionals in higher education increased more than 2½ times. A summary of major changes in higher education between 1955 and 1965 is reproduced as table 1.

Institutions.—The burden of this enormous expansion of enrollment was shouldered mostly by existing institutions. The number of postsecondary schools increased only 20 percent in 11 years. While enrollment increased from 2.8 to 6.0 million, full-time equivalent faculty and staff from 236,000 to 465,000 and expenditures from $4 to $15 billion, only 372 additional post secondary institutions opened their doors during this period.

The new institutions were mostly liberal arts colleges and junior colleges—257 of the 372 net additions. Twice as many junior colleges as liberal arts colleges were established—174 versus 83. All but 32 of the remaining additions were theological schools under private auspices (see appendix table A–1).

More private schools and colleges were established than public—over 206 versus 166. Eighty-three of the new private institutions were theological schools. When the theological institutions are excluded, the scales shift in favor of new public institutions. While most types of institutions increased in number, only teachers colleges declined. There were 10 fewer public teachers colleges at the end of the period. This decline was partly offset by the establishment of four new private teachers colleges.

Between the fall of 1955 and the fall of 1965, in the mainstream of postsecondary secular education, the number of junior colleges grew fastest—by 34 percent. Other professional schools were second with an 18-percent increase in number; liberal arts colleges, third with an 11-percent increase; and universities, fourth with 9 percent. Among other types of institu-

TABLE 1.—*Major changes in the postsecondary educational system: United States, 1955–56 to 1965–66*

Item	1955–56	1965–66	Increase	Ratio: 1965–66 to 1955–56
Number of institutions	1,858	2,230	372	1.20
Opening fall enrollment	2,811,000	5,967,000	3,156,000	2.12
Degree	2,660,000	5,570,000	2,910,000	2.09
Nondegree	151,000	394,000	243,000	2.61
Instructional and other professional staff (FTE)	236,000	465,000	229,000	1.97
Instructional	195,000	359,000	164,000	1.84
Other professional	41,000	106,000	65,000	2.59
Earned degrees	377,698	679,600	301,902	1.80
Income (thousands) (current dollars)	$4,445,000	$15,395,000	$10,940,000	3.46
Current	3,629,000	12,343,000	8,714,000	3.40
Plant fund	826,000	3,052,000	2,226,000	3.69
Expenditures (thousands) (current dollars)	4,190,000	15,018,000	10,828,000	3.58
Current	3,379,000	11,993,000	8,614,000	3.55
Plant fund	811,000	3,026,000	2,215,000	3.73

tions, the number of technological schools—a relatively small group in absolute terms—grew by 25 percent. Privately sponsored theological schools topped all categories with a 67-percent increase.

Enrollment.—Total degree-credit enrollment increased from 2.7 million in 1955 to 5.6 million students in 1965. Degree-credit enrollment increased faster at public institutions than at private institutions. By 1965 total public degree-credit enrollment was nearly two and one-half times its 1955 level. Total private degree-credit enrollment was more than 1½ times its 1955 level. Total degree-credit enrollment at private schools declined from 44 percent of total enrollment in 1955 to 34 percent in 1966 (see appendix table A–2).

Four-year institutions absorbed 85 percent of the 5.6 million degree-credit enrollees in 1965 and doubled their 1955 enrollment level. Two-year institutions enrolled 15 percent in 1965 compared with 12 percent in 1955. Their enrollment tripled during the period.

In 1955 students in private 4-year institutions outnumbered students in public 4-year institutions by 116,000. By 1965 public 4-year institutions enrolled 1.1 million more students than private schools. Enrollment in 2-year public institutions was slightly more than six times that in private institutions in 1955, and slightly more than seven times by 1965.

Private institutions enrolled 52 percent of the graduate students in 1955; by 1965 they enrolled only 40 percent. At the undergraduate and first professional levels, the decline in the role played by private institutions was only slightly less pronounced. The percentage of undergraduates enrolled at private institutions fell from 43 in 1955 to 34 in 1965. Nondegree enrollment at private institutions fell from 26 percent of the total in 1955 to 12 percent in 1965 (see appendix table A–3).

The increase in postsecondary enrollment during this period was due mainly to the growth of the population in the age group which attends postsecondary institutions. For instance, 36 percent of the eligible population age 18 to 24 was enrolled in undergraduate study in 1955. By 1964, undergraduate enrollment had increased to 40 percent of that group. Despite large increases in the number of students, growth in the proportion of eligible youth enrolled in undergraduate study has proceeded at a relatively low rate: an increase of only 4 percent of the eligible population. In this respect, junior colleges have made a progressively larger contribution than 4-year schools in absorbing potential students (see table 2).

TABLE 2.—*Ratio of undergraduate enrollment to the eligible population age 18–24: United States, 1955 and 1964* [1]

Type of institution	1955	1964	Increase	Percent increase
Total	0.356	0.395	0.039	11.0
4-year institutions [2]	.305	.326	.021	6.9
2-year institutions [3]	.051	.069	.018	35.3

[1] The eligible population is defined as those in the age group who hold a high school diploma, are not in the armed forces, and are not college graduates.

[2] Excludes graduate enrollment.

[3] Includes an indeterminate number of 2-year enrollees who do not hold a high school diploma.

Source: Robert Campbell and B. N. Siegel, "Demand for Higher Education in the United States," *The American Economic Review*, LVII, No. 3 (June 1967), 482–494.

Degrees.—Total earned degrees increased by 80 percent during the decade. It is noteworthy that (1) the number of graduate degrees awarded grew faster than that of undergraduate, and (2) the number of bachelor's degrees awarded in the social sciences and humanities grew relatively faster, and master's degrees relatively slower, than in the hard sciences. At the doctorate level, the number of degrees awarded grew faster in the hard sciences than in the other fields (see appendix table A–4).

Staff.—The growth of instructional staff from 1955 to 1965 was about 28 percent less than growth in enrollment. Total instructional staff increased 1.84 times while total enrollment increased 2.12 times during the period. The result is reflected in the gradual increase in the student/faculty ratio which changed from 13 students per staff member in 1955 to about 15 students per staff member in 1965. Both full-time and part-time instructional staff grew at the same rate. There was no substitution of part-time for full-time staff.

Other professional staff for administration and organized research, however, grew at significantly higher rates than enrollment. Administrative staff increased about 2.3 times between 1955 and 1965 and staff for organized research nearly tripled (see appendix table A–5).

Revenue.—While degree-credit enrollment doubled, total revenue of postsecondary institutions more than tripled between 1955 and 1965 from $4.5 to $15.2 billion, growing at a rate of 13 percent per year (see table 3). This is equivalent to doubling about every 6 years. Current fund revenue grew at about the same annual rate from $3.6 to $12.2 billion. Annual plant-fund revenue increased about 3.7 times during the 10-year period, from $0.8 to $3 billion. This annual rate of growth—14 percent— represents a doubling every 5 years. While increases in plant-

TABLE 3.—*Revenue of institutions of higher education by type of revenue: Academic years 1955–56 and 1965–66*

Item	1955–56 [1]		1965–66 [2]		Ratio: 1965–66 to 1955–56
	In millions of dollars	Percent of current revenue	In millions of dollars	Percent of current revenue	
ALL INSTITUTIONS					
Total revenue	4, 455	....	15, 240	....	3.42
Current fund revenue	3, 629	100.0	12, 189	100.0	3.36
Educational and general [3]	2, 450	67.5	7, 977	65.4	3.26
Organized research	432	11.9	1, 993	16.4	4.61
Auxiliary enterprises	694	19.1	2, 009	16.5	2.89
Revenue for student aid	53	1.5	210	1.7	3.96
Plant-fund revenue	826	....	3, 051	....	3.69

[1] Source: NCES.

[2] Estimated from a probability sample of 100 institutions which had filed financial reports by March 1967.

[3] Excluding organized research.

fund revenue, educational and general revenue, and revenue from auxiliary enterprises were roughly proportional to the increase in total revenue, revenue from organized research increased 4.6 times and revenue for student aid increased 4.0 times.

The most significant change in types of revenue received by institutions of higher education during the period was in revenue received from organized research, which grew from $0.4 billion in 1955 in $2.0 billion in 1965. The proportion of current fund revenue received from this source increased from 12 percent in 1955 to 16 percent in 1965. Although the growth in revenue for student aid was almost as great, such revenue still accounts for less than 2 percent of total current fund income. Revenue from auxiliary enterprises, which includes receipts from dormitories, dining halls, cafeterias, bookstores, and the like, grew from $0.7 to $2.0 billion but fell somewhat as a proportion of total current fund income.

While degree-credit enrollment from 1955 to 1965 increased 2.5 times at public institutions and increased only 63 percent at private institutions, the growth in total revenue at private institutions was only moderately lower than at public (appendix table A–6). Total revenue at private institutions increased 3.2 times during the period as compared to an increase of 3.6 times at public institutions. The clear implication is that education costs at private institutions could and did rise faster than at public institutions.

The general pattern of the increasing importance of organized research as a source of funds is true at both public and private institutions. During the 10-year period the proportion of current fund revenue received from this source increased from 15 percent to 21 percent at private institutions and from 10 percent to 13 percent at public institutions. Thus, this source of revenue remains more than one and a half times more important for private institutions than for public.

Student charges.—The growth in average student charges between 1955 and 1965 was slightly larger than the growth in average current fund revenues per full-time equivalent student at public institutions, but was significantly smaller than the growth in average revenue at private institutions. Table 4 shows that average revenue increased 34 percent and average student charges 38 percent at public institutions. At private institutions, however, average revenue increased 83 percent and average student charges increased 70 percent. Revenue from organized research is omitted in both calculations. The implication is that the difference in average student subsidy, which has always been greater in both relative and absolute terms at public institutions, diminished during the 10-year period. Although private institutions raised average tuition and fees proportionately more than did public institutions, charges for dormitory rooms at public institutions increased proportionately more than such charges at private institutions.

Expenditures.—Changes in the pattern of expenditures by all institutions between 1955 and 1965 generally followed the changes observed in the pattern of revenue by type. Expenditures for organized research and student aid became relatively more important in total current fund expenditure while the proportion of expenditures for educational and general purposes and auxiliary enterprises became somewhat less important. A comparison of the distribution of current fund revenue shown in table 3 and the distribution of current fund expenditures shown in table 5 suggests that about 4 percent of total current fund resources is transferred from the general account and auxiliary enterprise account to finance organized research and student aid, each receiving about 2 percent more resources than these functions yield in revenue. The information shown in appendix tables A–6 and A–7, however, shows that private institutions differ in this respect from public institutions.

While the proportion of total current fund revenue received for educational and general purposes di-

TABLE 4.—*Average current fund revenue per full-time equivalent student and estimated average charges per full-time resident degree students by control: 1955–56 and 1965–66*

[In current dollars]

Item	1955-56 Amount	1965-66 Amount	Percent change	Annual rate of increase
Public				
Average current fund revenue per FTE student[1]	1,466	1,971	34.4	3.0
Total tuition, board and room	710	979	37.9	3.3
Tuition and required fees	164	251	53.0	4.4
Board (7-day basis)	401	442	10.2	1.0
Dormitory rooms	141	286	102.8	7.3
Private				
Average current fund revenue per FTE student[1]	1,425	2,603	82.7	6.2
Total tuition, board and room	1,168	1,982	69.7	5.4
Tuition and required fees	527	1,141	116.5	8.0
Board (7-day basis)	436	496	13.8	1.2
Dormitory rooms	205	345	68.3	5.3

[1] Excluding revenue from organized research.

Source: Supplementary table to *Projections of Educational Statistics to 1975–1976.*

TABLE 5.—*Expenditures of institutions of higher education by type of expenditure: Academic years 1955–56 and 1965–66*

Expenditure	1955-56[1]		1965-66[2]		Ratio: 1965-66 to 1955-56
	Millions of dollars	Percent of expenditure	Millions of dollars	Percent of expenditure	
ALL INSTITUTIONS					
Total expenditure	4,190	....	15,018	....	3.58
Current fund expenditures	3,379	100.0	11,993	100.0	3.55
Education and general[3]	2,197	65.0	7,404	61.7	3.37
Organized research	506	15.0	2,190	18.3	4.33
Auxiliary enterprises	580	17.2	1,925	16.1	3.32
Student aid	96	2.8	474	3.9	4.94
Plant fund expenditure	811	100.0	3,026	100.0	3.73
Additions and replacement	753	93.0	2,657	87.8	3.52
Debt reduction	58	7.0	369	12.2	6.36

[1] Source: NCES.

[2] Estimated from a probability sample of 100 institutions which had filed financial reports by March 1967.

[3] Excluding organized research.

minished at both public and private institutions, the proportion of total current fund expenditures devoted to educational and general purposes increased at private institutions from 56 percent in 1955 to 58 percent in 1965. At public institutions, however, this proportion fell from 70 percent in 1955 to 65 percent in 1965. At private institutions 1965 revenue exceeded 1965 expenditures in all accounts shown except that for student aid. At public institutions, however, expenditures for both student aid and organized research exceeded revenue for those purposes.

Plant-fund expenditures.—The most significant development in the pattern of plant-fund expenditure between 1955 and 1965 was that the proportion of plant expenditures devoted to debt reduction at public institutions increased from 7 percent in 1955 to 15 percent in 1965. At private institutions, however, the proportion of plant-fund expenditures devoted to debt reduction increased only 1 percent, from 10 percent in 1955 to 11 percent in 1965.

Expenditures on plant additions and replacement at private institutions increased 2.6 times from about $300 million in 1955 to about $850 million in 1965. At public institutions such expenditures in 1965 were four times their 1955 level—$1.8 billion as compared to $450 million. This very large difference in the rate of capital investment between public and private institutions in 1965, however, probably reflects differences in timing rather than important changes in the long-term rate of plant investment per student.

4. The Higher Education Model

This section explains the methods used in deriving estimates of existing and possible alternative future patterns of undergraduate enrollment according to such characteristics as socioeconomic status, secondary school preparation or achievement level, and type of institution attended. In addition, information on the costs of attending various types of institutions and estimates of parent's contributions are used in calculating the student financial aid needed for the present and alternative enrollment patterns.

Who goes to college?—There is an abundance of information on past and current enrollments and projections of future enrollments by academic year and type of institution prepared by the National Center for Educational Statistics, U.S. Office of Education.[1] By contrast, very little work has been done in determining: (*a*) who goes to college by socioeconomic status; (*b*) how college enrollment trends are affected by the difference in secondary school preparation available to individuals from different socioeconomic groups; and (*c*) different college attendance rates for students from different achievement and socioeconomic groups year by year following high school graduation.

Socioeconomic status—The Project Talent series[2] is probably the best source of information available for estimating the socioeconomic status and achievement level of college students. Data from the study show the probabilities that a high school graduate will attend a 2-year or 4-year college during the year following high school graduation given his family socioeconomic status quartile and his high school achievement quartile (see appendix table A–8). The data indicate that a male high school graduate in the highest achievement and highest socioeconomic status quartile has a probability of .92 of entering college. The son of parents in the lowest socioeconomic status quartile with the same level of achievement has a chance of .61 of enrolling in college. In the case of females, the probabilities are .87 and .42 respectively for each of these groups. A male from the highest socioeconomic status quartile and the lowest achievement quartile has a .38 chance of enrolling in college as compared to .10 for a male from the lowest achievement and lowest socioeconomic status quartile. Thus, depending upon the achievement level, a male child of poor parents has only from one-quarter to two-thirds the chance of enrolling in college as a child with the same achievement level and rich parents.

By multiplying the probability of entering college for each of the 16 socioeconomic status/achievement cells times the proportion of high school graduates in each cell (appendix table A–9), one can obtain an estimate of the distribution of the high school graduates entering college by these two variables.

Table 6 shows the distribution of those entering college during the year following high school graduation by socioeconomic status. The distribution of each socioeconomic group by achievement quartile is shown in appendix table A–10. It is interesting to note that about 40 percent of the young entering male students come from the highest socioeconomic status quartile while only 12 percent come from the lowest socioeconomic status quartile.

Effect of secondary school preparation.—The proportion of the poor going to college is affected not only by socioeconomic characteristics but also by their achievement in high school. It can be seen from appendix table A–9 that almost one out of every two

TABLE 6.—*Percentage of students entering college during the first year following high school graduation by socioeconomic status: High school class of 1961*

Socioeconomic status	Male	Female
	Percent	*Percent*
High quartile	40	44
Second quartile	28	27
Third quartile	20	19
Low quartile	12	10
	100	100

Source: Derived from *Project Talent* data. Implicit distribution from appendix tables A–8 and A–9.

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[1] See: U.S. Office of Education, National Center for Education Statistics, *Projections of Educational Statistics to 1975–76*, 1966.

[2] John C. Flanagan and William W. Cooley, *Project Talent*, University of Pittsburgh. Supported by the U.S. Office of Education, Project Talent is a longitudinal study of a cohort of high school students.

males with parents in the highest socioeconomic status quartile rated in the highest achievement quartile in high school. This contrasts with males of parents in the lowest socioeconomic status quartile where less than one out of 13 are rated in the highest achievement quartile.

As shown in appendix table A–10, over half of the students who enrolled in college from the highest socioeconomic status quartile were rated in the highest achievement quartile. By contrast, for those entering from the lowest socioeconomic status quartile slightly over one-fourth were from the high achievement quartile. The percentage of students from the highest one-quarter of high school achievers declines significantly as the family socioeconomic status declines. Furthermore, these differences in secondary school preparation by family socioeconomic status result in higher dropout rates in college.

Attrition in enrollment.—The probability of enrollment in college by single years of age and sex for the entire population is available from published Census material. Related data on the attrition of freshmen through 4 subsequent years of college are available from the American Council on Education. This information, together with the annual number of high school graduates and college enrollment, was used in estimating the probability of full-time degree-credit undergraduate enrollment for high school graduates by number of years since high school graduation. The method used is described in the technical appendix, and results are shown in appendix table A–11. The differential in the probability of enrollment for high school graduates in each socioeconomic quartile and achievement quartile can be computed from appendix table A–8 and is shown in appendix table A–12. With this information, attrition in the probability of enrollment for each socioeconomic and achievement group was estimated as described in the technical appendix.[3] Estimates of the future college population by socioeconomic and high school achievement group can, thus, be derived from information on the size of past and future high school graduating classes. As will be described below, the effect of alternative assumptions regarding changing costs and level of student aid can then be assessed.

Alternative future enrollment patterns.—Projected enrollments for the years 1968 and 1972 based on alternative enrollment patterns are described below. Projections based on the present patterns of enrollment are labeled the "low" estimate.

For example, one may ask: What enrollment pattern would result if personal financial resources presented no barrier to a college education? As an approximation to an answer to this question, it was assumed that within a given achievement level, high school graduates would enroll in college with the same probability as the highest socioeconomic status quartile and would have the corresponding attrition rates through successive years of college. This pattern is labeled the "high" estimate. Under such circumstances, the proportion of students from the upper socioeconomic status quartile entering college the first year following high school would be reduced from roughly 42 percent to about 28 percent. The proportion of such students from the lower socioeconomic status quartile would increase from about 11 percent to about 20 percent. In other words, the difference between 28 percent and the expected 25 percent from the highest socioeconomic status quartile above is due to the superior secondary school education which the children receive. Similarly, the difference between 20 percent and the expected 25 percent from the lowest socioeconomic status quartile is due to the poorer quality of their secondary education.

An alternative and somewhat more realistic projection of possible future enrollments was based on inferences from information provided by Jaffe and Adams.[4] Their data show that roughly all the children of parents in the professional and managerial class who wanted to go to college enrolled. Only 80 percent of children of white-collar workers who wanted to attend postsecondary institutions actually enrolled in college. Roughly 60 percent of children of blue-collar families who wanted to attend enrolled. The difference between those who wished to enroll and those who did may be taken as a measure of the financial barrier. On the basis of this information, it is assumed that in the absence of financial barriers the probabilities of attending college would be 20 percent greater in the second socioeconomic status quartile, 30 percent greater in the third socioeconomic status quartile, and 40 percent greater in the bottom socioeconomic status quartile. Using these assumptions and adjusting attrition rates accordingly, we can derive a second enrollment pattern. This pattern is labeled the "medium" estimate.

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[3] Related information on dropout rates by the occupational level of fathers and the achievement level of students is also available. See: Leland L. Medsker and James W. Trent, *The Influence of Different Types of Public Higher Institutions on College Attendance from Varying Socioeconomic and Ability Levels*, Center for Research and Development in Higher Education, University of California, Berkeley, 1965.

[4] A. J. Jaffe, and Walter Adams, "Predictors of College Plans of High School Seniors, Fall 1965," and "Socioeconomic Status and College Plans, 1939–1959 and 1959–1965," in an unpublished progress report presented to the U.S. Office of Education in connection with a research project supported by the Office.

The cost of going to college.—With additional information on the cost of attending different types of higher education institutions and the expected family contribution for children's higher education, one can also evaluate the total cost of alternative patterns in enrollment.

Under the sponsorship of the Office of Education, André Daniere, Harvard University professor, estimated the distribution of entering freshmen by socioeconomic status quartile and by achievement level for various types of institutions (appendix table A–13). As was to be expected, most children from wealthy families and with high achievement went to expensive private colleges. In the lowest achievement level, even among children from wealthy families, many went to local community colleges or less expensive public institutions.

Estimates of the costs of attending the institutional types used by Dr. Daniere are averages weighted by enrollment within each type of institution. Book expenses were estimated on the basis of unpublished data on textbook price trends provided by the American Textbook Publishers Institute and by updating the Hollis[5] study on college costs. Miscellaneous expenses were also estimated by updating the Hollis study. These estimates (appendix table A–14) indicate that as of 1966 the average student cost of attending a private 4-year college was $2,564; for public 4-year institutions, $1,561; and for 2-year community colleges, $1,103.

The total financial requirements for the 1966 enrollment pattern were calculated by multiplying the number of students in each type of institution by the total cost of attending each type. The total financial requirements for future enrollment patterns were calculated in the same way but by using increased cost factors. In order to estimate the 1972 enrollment costs shown below, the following increases were assumed: tuition rates, 5 percent per annum; living costs, 1½ percent per annum; book prices, 5 percent per annum; and miscellaneous expenses, 1½ percent per annum.

Parents' contribution to costs.—In order to determine student financial needs which are not likely to be met by family contributions, an estimate was made of the total financial requirement of students in each socioeconomc group and the average contribution expected from the student and his family. Bowman and Weiss, Educational Testing Service, developed a standard for student and parent contributions based on net family income and average summer earnings (appendix table A–15).

The gap between the cost of attending college and the expected total family contribution for 1966/67 was calculated using the procedures outlined above. For future years, cost factors were increased as explained above and the ability of families to contribute to these costs was estimated by adjusting incomes for future years according to projections prepared by the National Industrial Conference Board.[6]

Projections of enrollment for 1968 and 1972.—Three sets of projections of undergraduate enrollments for 1968 and 1972 are presented in appendix tables A–16 and A–17. The assumptions underlying these projections, as discussed earlier, can be summarized as follows:

Low: Continuation of the recent enrollment pattern by achievement and socioeconomic quartile.

Medium: An enrollment pattern for all persons based on the present pattern adjusted for differences in motivation found among persons of different socioeconomic status. This adjustment was performed using data from the Jaffe and Adams study cited earlier. The purpose of this projection is to ascertain the effect on enrollments if financial barriers were removed but present motivational barriers continued.

High: An enrollment pattern for all socioeconomic quartiles based solely on the present pattern for persons in the highest socioeconomic status quartile. The purpose of this projection is to measure the effect of removing both financial and motivational barriers.

The results of the projections may be summarized as follows:

- Full-time undergraduate enrollments by 1968 would be 604,000 higher under the medium projection than under the low projection. If the general population went to postsecondary school solely in accordance with the highest socioeconomic status quartile pattern, undergraduate enrollments would exceed the low projection pattern by more than 1½ million.
- In 1972 total enrollments in the medium projection are approximately 1.1 million above those of the low projection while the high projection results in 2.7 million more students than the low.

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[5] Ernest V. Hollis and Associates, *Costs of Attending College*, U.S. Office of Education, 1957.

[6] "Projections of families by age and income, 1965–1975," *The Conference Board Record*, March 1966.

- In terms of percentages, by 1968, 14 percent more students would attend postsecondary institutions under the medium-projection pattern and 37 percent under the high-projection pattern when compared to the low-projection pattern. By 1972 the number of students would increase by 22 percent (medium projection) and 54 percent (high projection) when compared with the low-projection pattern.
- With the low-projection pattern the socioeconomic compositions of the students would scarcely change. With the medium-projection pattern the proportion of higher socioeconomic status students would decline to 42 percent by 1968 and would further drop to 40 percent in 1972. Under the high-projection pattern the proportion of children from higher socioeconomic status families would decline to 35 percent in 1968 and 31 percent in 1972.
- By contrast, the share of 1968 enrollments claimed by the low socioeconomic status children would increase from 7 percent under the low projection to 9 percent under the medium pattern to 16 percent under the high. In 1972 these figures would be 9 percent and 19 percent respectively.
- The change in attendance by socioeconomic status quartile would have important effects on the quality of students going on to postsecondary education. For instance, under the low-projection pattern roughly 57 percent of all students in 1972 would have ranked in the top quarter of their class. With the medium-projection assumptions their share would decline to 53–54 percent. Under the high-projection assumptions this reduction would be even more dramatic: the share of students in the upper achievement quartile of the class would be reduced to 45 percent.
- By contrast, the share of students in the lowest half of the high school graduating class attending postsecondary educational institutions would increase from 16 percent in 1968 and 1972 under the low-projection pattern to 18 percent under the medium-projection pattern and 25 percent under the high-projection pattern by 1972. In other words, increasing the participation of children from lower income families in postsecondary education is likely to decrease the average quality of entering freshmen.

Estimates of student financial needs.—The financial needs of students for each enrollment projection pattern have been estimated according to the procedures described above. The total gap based upon the low-projection pattern is likely to increase from $2.1 billion in 1966 to $2.3 billion in 1968 and grow to $2.8 billion in 1972. Under the medium-projection pattern the financial gap will be $2.9 billion in 1968 and $4.1 billion in 1972. Under the high-projection assumption the gap could grow to $4.1 billion in 1968 and $6.2 billion in 1972. The distribution of the gap by income quartile is shown in table 7.

TABLE 7.—*The gap between estimated total family contributions for the college education of their child and the total costs of alternative enrollment patterns by socioeconomic status quartile for 1966, 1968, and 1972*

[In thousands of dollars]

Enrollment pattern	Socioeconomic status quartile				
	High	2d	3d	Low	Total
1966:					
Low	(1)	834	786	446	2,066
Medium	(1)	881	860	523	2,264
High	(1)	902	977	798	2,677
1968:					
Low	(1)	950	888	491	2,329
Medium	(1)	1,110	1,132	706	2,948
High	(1)	1,166	1,481	1,492	4,139
1972:					
Low	(1)	1,165	1,082	584	2,831
Medium	(1)	1,540	1,623	930	4,093
High	(1)	1,632	2,292	2,321	6,245

[1] Not estimated.

5. Undergraduate Student Aid

During the 1966–67 school year, approximately $1.2 billion was provided for undergraduate student aid through the major Federal aid programs and other programs supported by State governments and private sources which are administered by institutions of higher education. About one-half this amount was in the form of loans. The other half was in the form of grants, wages for part-time work, or veterans' benefits.

During the year, about 4 million undergraduates attended college on a full-time basis to obtain degree credits. The total cost of this education to both students and institutions was approximately $11.3 billion.[1] Of this total cost, about 57 percent was provided out of family and student income or savings; 5 percent through student grants, work-study wages, and veterans' benefits; 5 percent was provided through loans of various kinds both public and private; and about 33 percent came from State, Federal, endowment, and private contributions to the educational institutions.

The precise effects of approximately $1.2 billion in student aid provided by the major programs are difficult to measure. However, the available evidence suggests that roughly 1.2 million students benefited from this aid.[2]

Cost of higher education relative to income.—Even though children of parents from lower-income groups do attend cheaper colleges, the cost of college, relative to the income of parents, is still very much higher for persons in the lower income bracket. The costs relative to income are shown in table 8. It should be noted that, for the lowest-income quartile, the cost of the cheapest 2-year college is equal to 48 percent of the family's mean income. For the highest quartile, the cost of private 4-year college, the most expensive alternative, is only 16 percent of the average income.

TABLE 8.—*Student costs of higher education relative to family income*

	1st quartile (lowest)	2nd quartile	3rd quartile	4th quartile (highest)
Mean family income	$2, 321	$5, 549	$8, 359	$16, 016
STUDENT COST				
Public, 4 year	.67	.28	.19	.10
Private, 4 year	1.10	.46	.31	.16
Public, 2 year	.48	.20	.13	.07
Private, 2 year	.89	.37	.25	.13

Student financial need.—The amount of money needed by students from families with different incomes is shown in table 9. The student population is divided into four quartiles. For purposes of the analysis, students from the upper quartile are assumed, on the average, not to need outside financial help. Where the maximum cost per student is set at $1,984 per year, the average need for all students from the upper income group would be quite low, but has not been estimated. Those from the lowest quartile need an average of roughly $1,477 from sources outside the family to cover the living and tuition costs of full-time study. These figures have been derived by taking into account the different types of colleges attended by students from different income quartiles, and the standard parent contribution expected from each income group according to the College Scholarship Service standards of need (see chapter 4).

Estimates in column (3) in table 9 show that average student costs for lower-income students are lower than for upper-income students because the former generally attend lower-cost institutions. The difference between the average cost of full-time study to the student and the average family-student contribution toward this cost can be defined as the student need gap. It is shown in column (5). Average student financial need is not estimated for the highest family income quartile, this does not mean that the same number of students from that group necessarily would have attended college in the absence of student aid.

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[1] This includes student living expenses but does not include approximately $14 billion which might have been earned by students had they been employed in full-time occupations. Approximately 80 percent of institutional expense for student education and income from student fees was allocated to full-time undergraduate instruction.

[2] Estimated by dividing the total amount of aid extended by the average financial need for each of the three lowest-income quartiles. For the highest-income quartile it is assumed that the number of NDSL, Work-Study, and EOG recipients are duplicates of those receiving institutional aid.

TABLE 9.—*Average family income, average student cost, average family contribution, and average annual financial need for degree-credit undergraduates at all institutions of higher education by size of family income: 1966–67*

Approximate family income quartile	Average family income (1)	Undergraduate students enrolled, full-time (In thousands) (2)	Average cost tuition, fees, books, and personal expenses required for full-time study (3)	Average family contribution [1] (4)	Average student financial need for full-time study (3)–(4) (5)
High	$16, 016	1, 940	$1, 984	(2)	(2)
Second	8, 359	1, 145	1, 788	$1, 060	$728
Third	5, 549	671	1, 660	489	1, 171
Low	2, 321	302	1, 553	76	1, 477
Total	10, 745	4, 058	1, 843	(2)	(2)

[1] Based on College Scholarship Service tabulation of family-financial plans filed by scholarship recipients. Excludes expenditures not directly related to formal education.

[2] Not estimated.

However, currently accepted scholarship standards do not normally provide for aid at this level of income.

PRESENT PROGRAMS OF STUDENT AID

Derivation of estimates.—Estimates of the amount of undergraduate aid shown in table 10 were obtained as follows:

Institutional aid.—This includes scholarships, fellowships, matching parts of the educational opportunity grant (EOG) and the work-study programs, as well as other programs administered by institutions on behalf of private businesses and States. The distribution of aid by income quartile is derived from the records of 53 institutions, which provided this information to the American Council on Education (ACE).

Work-study and educational opportunity grant programs.—The money available for these programs was allocated by income quartile on the basis of the distribution of student recipients by income of the parent and class standing during fiscal 1966. The allocation method made use of average amounts awarded by class standing and family income derived from the sample of institutions, statutory limitations on amounts awarded under the various programs.

Veterans' benefits.—The total amount of the program was estimated on the basis of information from the Veterans Administration, which showed the number of students aided by class standing and family income. It was assumed that the average amount received by a veteran attending school full-time was $110 a month for a 9-month academic year.

National defense student loan.—The total amount advanced and number of borrowers were provided by the Bureau of Higher Education. The distribution by class standing and family income was based on a sample of records of NDSL applications for the 1966 academic year.

Guaranteed loan program.—Total loans and number of borrowers were obtained from the Bureau of Higher Education. The distribution by income quartile is based on a tabulation by income and class standing of borrowers during the first 15 months of the operation of the program.

Average aid.—The estimated amount of aid per recipient varied considerably according to the program under which the aid was extended. This information is shown in appendix table A–18. The average institutional aid, for example, is estimated at $400 per student. This amount is exclusive of the matching portion of the educational opportunity and work-study grants by institutions.

The work-study grants average $826 per recipient for an average of about 585 hours of work. The average educational opportunity grant is estimated to be about $433 per recipient. The veterans' aid, based on the assumption described above, was set at $990 per academic year. The average NDSL loan amounted to $588, and the average guaranteed loan $837. Tabulations of guaranteed loans by class standing not reproduced here show that the amount of the loan increases slightly as the student progresses in school. Freshmen took down $716, on the average, sophomores $817, juniors $869, and seniors $870 in loans. Also, on the average, Negroes borrowed 10 percent less than others.

Aid in relation to income.—The figures in table 10 are an approximation on two counts: (1) The allocation by income quartile is not precise, and (2) an assumption was made that all the aid went to full-time students.

One way of looking at the adequacy of the present programs for student aid is to examine the extent to which student need from each income quartile was covered by present aid programs. Looking at the aid as it is shown in appendix table A–19 we see that 44

TABLE 10.—*Undergraduate student financial need and funds extended under major student aid programs by student family income: 1966–67*

Line	Approximate family income quartile	Number of full-time undergraduates (thousands) (1)	Student financial need for full-time study (millions) (2)	Major program student aid: Total aid received by full-time students (millions) (3)	Institutional [1] (millions) (4)	Work study (millions) (5)	Educational opportunity grants (millions) (6)	Veterans benefits (millions) (7)	NDEA student loan (millions) (8)	Guaranteed loans (millions) (9)	Other non-federal and personal sources [2] (millions) (10)
1	High..............	1,940	([3])	$232	$14	$6	$1	$32	$40	$139	([3])
2	Second.............	1,145	$834	259	28	8	6	81	40	96	$575
3	Third..............	671	786	300	77	36	18	24	72	73	486
4	Low................	302	446	421	145	102	33	20	69	52	25
5	Total.........	4,058	([3])	1,212	264	152	58	157	221	360	([3])
6	Total excluding highest income group...........	2,118	2,066	980	250	146	57	125	181	221	1,086

[1] Includes State and private aid administered by institutions of higher education.

[2] Except for the high income quartile, equals amount shown in column (2) minus amount shown in column (3).

[3] Not estimated.

percent of the financial need of students from the lowest-income quartile was covered by grants, 23 percent by work-study wages, and 27 percent by loans. Therefore, 94 percent of the total student financial gap was covered. By contrast, for the third quartile, 15 percent of the student needs not covered by family contributions was provided by grants, 5 percent by work-study wages, 18 percent by loans. Thus, a total of only 38 percent was covered by all programs. In the second highest-income quartile, 14 percent was covered by outright grants, 1 percent through work study, and an additional 16 percent by loans. Thus, a total of 31 percent was covered in this manner.

It is very likely that part of the remaining financial need of students was met through part-time work. U.S. Bureau of the Census reports published by the Bureau of Labor Statistics[3] show that in October 1966, 30 percent of full-time college students were engaged in part-time work. These full-time college students, numbering about 1.2 million would have been required to work an average of only 15 hours per week at an average rate of $1.88 per hour for 36 weeks in order to completely account for both the work-study program and the entire remaining financial gap shown in table 10. Alternatively these students could have worked an average of 19 hours per week at an average rate of $1.50 per hour to accomplish the same result. In all probability some of the students with parents in the upper quartile worked. Since no estimate of the socioeconomic distribution of working students is available, undoubtedly some of the gap in need was still covered by savings of their families or the reduction of living standards.

Roughly $232 million in student aid, most of it in loans, went to children whose parents belonged to the highest-income quartile. Since the lower limit of family income in that quartile is $10,000, it is likely that children of parents with numerous offspring qualified for outright grant aid and that a large number of students found loans an attractive way of financing their education at more expensive institutions.

As shown in appendix table A–20 and table 10, the student financial gap *not* covered by the major Federal and institutional programs was:

1. $83 per student or a total of $25 million for the lowest quartile of income recipients.
2. $724 per student, or a total of $486 million for the third-income quartile.
3. $502 per student, or a total of $575 million for the second-income quartile.

In other words, an additional $1 billion would have been needed if the financial gap for full-time students had been filled through institutional and Government channels.

A somewhat different view of student aid may give some insight into the desirability of different forms of student aid. If we look at the extent to which outright grants helped students in each quartile, and then examine how much of the remaining need was filled by work study and how much by loans, we gain further insight into how the programs operated. In the lowest quartile 44 percent of the gap in student need was filled by outright grants, and 41 percent of the remainder was taken up by work-study. Following this, 83 percent of the remaining gap was filled by loans. In the third lowest quartile, only 15 percent was available in grants, only 5 percent of the remainder was covered by work study, and 23 percent of the rest was covered by loans. Roughly the same situation was evidenced in the second quartile: 14 percent from grants, 1 percent from work study closed the remaining gap, and finally loans took up 19 percent of what remained.

Loans thus played a much more important part in financing the children of the poor than in financing those from other income quartiles where the smaller financial need occurred. The average NDSL loan per borrower from the lowest-income quartile was $557 and for guaranteed loans about $800. Appendix table A–21 shows that roughly two out of three students from this income group resorted to a loan to finance their higher education. For the third quartile the average loan per borrower was slightly higher, and roughly one out of three students took out a loan. For the second highest quartile, roughly one student out of six took out a loan. In the highest income quartile roughly one student out of nine borrowed.

If students from the lowest-income quartile borrowed only as much on the average as students from the very highest quartile, the average remaining financial gap for that group would have increased more than 4½ times to $391. The average remaining financial gaps in the two other quartiles would have also risen to $846 and $528 for the third and second quartiles respectively. Conversely, if students from the third- and second-income quartiles, borrowed as much as those from the lowest quartile, the gap would be reduced to $539 and $221 respectively (see appendix table A–20).

The students from the bottom quartile were served somewhat better by the present programs, mostly because of their willingness to borrow. Without such borrowing, the student gap in the bottom quartile would have increased more than 5½ times; it would have increased 30 percent in the third quartile, and 24 percent in the second quartile. Present Federal and institutional programs appear to favor the lowest-income quartile of the population. A serious financial gap still exists in the third quartile from the top. Roughly 19 percent of student aid goes to children from the upper quartile to upgrade the choice of colleges.

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[3] "Employment of School Age Youth, October 1966." *Monthly Labor Review*, August 1967, vol. 90, No. 8, p. 26.

PROPOSED AID TO STUDENTS

Tax-credit plans to assist with college costs.—Two types of tax-credit plans, one presented in a bill by Senator Ribicoff and another presented by Senator Prouty, have received considerable discussion as aids to financing a postsecondary education. Both proposals would make it possible for students to claim a tax credit based upon the cost of tuition and books, an important part of the expenses of most college students and especially so of students from low-income families. The salient features of the two plans are presented in appendix table A–22.

The major benefit under both plans would go to students who attend private 4-year colleges. Under the Ribicoff plan the credit is against tax. Under the Prouty proposal a refund would be authorized if the credit was larger than the tax. However, because both proposals would reduce allowable deductions by the amount of other aid received, the children of poor parents who already receive scholarship aid would scarcely benefit from these proposals.

The Ribicoff proposal would cost about $1.0 billion and the Prouty proposal about $0.7 billion (see appendix table A–23). Both proposals would be an addition to present student aid programs. It will be noted that a disproportionate share of the credit would go to families in the upper half of the income distribution. The average credit for each income group bears little relationship to average financial need as shown in table 9.

Although these estimates apply to full-time undergraduate study only, they correspond fairly closely to the estimates made independently by the U.S. Treasury Department, which put the cost of the Ribicoff bill at roughly $1 billion.

Outright grants to postsecondary students.—An intuitively attractive idea is to make outright grants of equal size to postsecondary students and then make the grants taxable to the parents. This plan has advantages: (1) it may simplify the administration of many Office of Education student aid programs, and (2) unlike the tax-credit plan, it would provide larger benefits to children of poor parents than to children of rich parents.

In actual fact, the marginal tax rates on income do not differ sufficiently to cause the net benefit to be distributed according to financial need. Appendix table A–24 shows the net benefit and net Federal cost by income quartile. The marginal tax rates range between 10 percent on the average for persons in the lowest-income quartile, and 35 percent for those in the highest quartile. The total net cost to the Federal Government would be about $2.5 billion for the present student population. About half of the benefits would go to parents in the upper-income quartile, and less than 3 percent to those in the lowest-income quartile.

The conditional repayment plan.—This plan has a great deal of emotional appeal. In effect, it attempts to shift the cost of subsidizing college attendance from the general public to those persons who receive higher education. The proposal, as first stated by Milton Friedman, was that students would be allowed fairly large sums of money, say up to $3,000 per year, to pay college costs. They would repay these sums out of future income, with the repayment being contingent on the level of their future income. One version of the plan would assess participants a simple 1 percent of taxable income per year for each $3,000 advanced. Payment would be made and accounted for at the same time as the Federal income tax declaration is filed. Proponents of the plan intend that repayment terms be set at whatever level needed to make the system self-financing within one generation of participants.

Several practical objections to this plan remain unanswered which make it difficult to estimate who would benefit and what the costs might be. Those individuals who could expect to repay only small amounts or nothing at all—future housewives and those who expect to enter lower paying occupations—probably would be delighted to participate in the plan. On the other hand, individuals who could expect to repay more than the amount advanced, plus interest, would have a strong incentive to finance their education in other ways. Nearly 75 percent of the current undergraduate population requires no outside financial assistance at all for their college work. Many such individuals would have no reason to participate in the plan and needlessly incur an additional income tax liability for the remainder of their working life. These students are likely not to participate, because they are likely to lose under the plan.

The precise terms of repayment are critical. Terms would need to be stated in advance and could not be raised ex post facto. However, once the repayment terms were stated, the self-selection of students would very likely cause repayments to fall short of advancements. Under any given schedule for repayment, those who believed that their average future income would be higher than the average for all participants would have a very strong incentive to finance their education in other ways. But the success of the plan depends upon the participation of these very students. Because most women would wish to participate and take the maximum advance, it can be seen that men would be required to return their own advance plus an amount to cover that advanced to virtually all women students.

One version of the plan would permit participants to buy out of the plan at any time by returning the amount advanced plus annual interest of 6 percent. Such a provision would be virtually certain to cause the plan to fail.

There is an implication that a variable repayment plan of this type would relieve the general public from the burden of financing the goal of equal educational opportunity. However, the Federal Government would be required to obtain the initial funds—either through borrowing or through tax revenues—for the establishment of the program. In either event, it is the general public who would bear this burden. Currently, the public would be required to give up some alternative use for the funds involved in return for a future benefit.

The college educated have always returned the cost of their prior subsidy to the general public through a form of variable repayment plan. On the average, undergraduates currently meet only between 25 percent and 35 percent of the cost of their instruction. The remainder comes from Federal and State taxes and subsidies and from private gifts. Students subsequently return these amounts through payments of Federal and State taxes and through private gifts in variable amounts depending upon their income.

For example, if a taxpayer's average annual income shifts from a $6,000–$7,000 range to a $9,000–$10,000 range, the average annual Federal income tax paid increases by more than $500 at current rates. This would seem to be a most conservative estimate of the average annual yield—in Federal income taxes alone—of any effort to permit all potential students to attend college. This means that the Federal Government could advance an average of $9,900 to those future taxpayers who would otherwise not go to college and reasonably expect the full amount, plus 4 percent interest, to be returned within 40 years or less.

Variable grants to individual students.—A proposal which often has been made is that students be given Federal scholarship grants in relation to financial need in much the same manner as private scholarship funds are now administered. The rationale for this proposal is generally stated in terms of the advantages to the Nation from increased college attendance. It is also stated, and rightly, that since students from lower-income families have to depend much more heavily on loans than richer students, it would be well to substitute a program of aid which would cover the minimum needs of attending college for all income groups in order not to penalize students from poorer families during the long repayment period. The proposal would also tend to simplify the complex network of present programs and would equalize the opportunity to attend college for students from all income groups insofar as economic restraints are present.

The estimated cost of financing the 1966/67 undergraduates would have been about $1.6 billion more than present student aid programs (see appendix table A–25).

Distribution of benefits from various programs by income quartile.—Table 11 summarizes the distribution of aid under various programs, both current and proposed, by family income quartile. Excluded from the table is the contingent repayment, for which no estimate could be prepared because of the uncertainties with respect to the participants. It will be noted from the table that the current Federal program which has benefited the lowest-income quartile most is work study, with educational opportunity grants second. Non-Federal institutional aid programs are also heavily oriented to helping the poor.

By contrast, despite the heavier reliance on per capita loans by the poor, the major disbursements of loan programs accrue to the richer students. This is due to the larger number of students from upper-income families.

Another way of looking at the distribution of student aid is to examine the share of each program in total student aid by income class. It can be seen from appendix table A–26 that for the lowest-income quartile work-study and educational opportunity grants account for about one-third of the aid extended, veterans' benefits account for 5 percent; and another 35 percent of the aid comes from the institution. The remaining aid to low-income students comes from loans. Among students in the upper-income quartile, more than three-quarters of the

Table 11.—*Funds disbursed under current student aid programs and estimated cost of proposed programs by student family income: 1966–67*

[In millions of dollars]

	Current programs						Proposed programs Amounts Net of current grants			
	Grant programs				Loans					
Quartile	Institutional (1)	Work-study (2)	EOG (3)	Veterans benefits (4)	NDSL (5)	Guaranteed loans (6)	Ribicoff tax credit (7)	Prouty tax credit (8)	$1,000 Taxable grants to parents (9)	Federal scholarships according to need (10)
High........	14	6	1	32	40	139	524	256	1, 214	(1)
Second......	28	8	6	81	40	96	301	285	801	719
Third.......	77	36	18	24	72	73	122	143	445	667
Low.........	145	102	33	20	69	52	0	0	74	248
Total	264	152	58	157	221	360	947	684	2, 534	1, 634

[1] Not estimated.

aid came from loans, and 14 percent came from the Veterans Administration.

Most programs may be said to have met their stated goals, in that aid was extended either to benefit all students or to induce lower-income students to attend college who would not otherwise have done so.

There is no evidence that any of the various student aid programs failed to have the desired effect. The evidence is that all programs did induce more students to attend college than would otherwise have done so; that the grant-in-aid and work-study funds were allocated according to student need or, as in the case of the veterans' program, according to eligibility; and that the loan programs also made it possible for some students to attend better quality institutions or complete their education sooner than they would have otherwise.

Adequacy of programs.—The statement that current student aid programs produce the desired results, however, does not imply that more aid, effectively distributed, would not produce additional students and additional future benefits to society. The proportion of low-income students in the total full-time undergraduate population was estimated to be 7 percent. The proportion from the highest family income quartile was 48 percent. There is evidence, shown in table 6, that when high school achievement levels are held constant, the rate at which students enter college is influenced by ability to pay. Virtually every item represented in the socioeconomic index is correlated with family income. Thus the distribution of entering freshmen by socioeconomic quartile implied by the data in that table is essentially identical with the distribution of freshmen by family income quartile as measured independently by the ACE.

If the high school graduates from the three lowest socioeconomic quartiles entered college at the rates shown in table 6 for their own achievement levels, but at just one socioeconomic quartile higher than their own, then one could expect that the proportion of full-time undergraduates from the lowest-income quartile would be raised from 7 percent to 9 percent and the proportion from the highest-income quartile would be lowered from 48 percent to 40 percent. This would imply an additional 795,000 full-time undergraduates in 1966–67. As shown in appendix table A–27, this would have required approximately $812 million in additional student aid last year. There is hence a strong presumption that the current terms of the loan programs were not attractive enough to reach all potential students in the absence of more grant and workstudy seed money.

The average unfilled student gap as shown in column (10) of appendix table A–20 may be viewed in a different light. Some students in the second- and third-income quartiles may have used some of their parents' savings to finance their education, or they may have earned more from part-time work from sources other than the work-study program, or both. Thus, if one replaces the average amount borrowed and the average amount earned under the work-study program, as shown in appendix table with the corresponding averages for the lowest-income quartile, the remaining gap is closed for the second quartile and is reduced by two-thirds in the third quartile. The results of this adjustment are shown in appendix table A–28.

Effects of student aid on institutions.—Any general financial assistance advanced to students—as compared to subsidies to the educational institutions—

would place important new pressures on the structure of institutions. If students could attend any institution they pleased without regard to student costs, each would seek that place which offered the most effective instruction in the student's fields of interest on the condition that the student believed he could meet the institution's standards of performance.

Although we have very little information on institutional effectiveness, one rough measure is the average cost of instruction. This is only partly correlated with tuition and fees because of the heavy subsidy which most institutions offer students. Even though tuition and fees tend to be higher at higher-cost institutions, there is a reasonable presumption that students nevertheless receive more per dollar of student cost at higher-cost colleges.

Thus, one effect of removing all financial constraints on students would be to shift the high academic achievers in the low-income brackets from low-cost institutions to the higher-cost institutions.

Of course, no institution can accept a substantial increase in enrollment without either increasing its tuition and fees or obtaining additional funds from Federal, State, or local governments or from private gifts. Thus, as a practical matter, it is virtually certain that the removal of student financial constraints will require that average tuition be raised in order to spread the current and expected levels of institutional subsidy over a substantially increased number of students.

For the current college population, tuition and fees average about $500 per year, and the cost of instruction averages about $1,500. Thus, one can easily speculate that if the total class hours of instruction increased by about 40 percent—roughly what would be involved if all potential students attended full time—average tuition and fees would have to be raised to about $780 per year or about 56 percent. This assumes that the average cost of instruction would remain at roughly $1,500, and that additional instructional expenses would have to be met through increases in tuition. Thus, removing the financial constraints of those who otherwise would not be in school full time would raise the cost to those who would attend without student aid, because institutional subsidies would have to be spread over a larger number of students.

Benefits in relation to cost.—The maximum investment required to produce a single college graduate is the full cost of his instruction and expenses plus the student's foregone income while in school. The amounts can currently be set at approximately $1,500 per year for instruction, about $1,000 per year for expenses, and about $2,500 per year to cover the foregone income of an 18- to 21-year-old who would be out of the labor force 9 months of the year. This amounts to $5,000 per year and $20,000 for 4 years.

One way to assess the future benefit of such an investment is simply to ask: What increment in annual income over the expected working life of the student would be needed to justify this investment? Assuming a working life of 40 years, a student would need to earn only $332 per year more than he otherwise would to return 6 percent a year on a 1-year college investment; $664 per year to return 6 percent on a 2-year college investment; $997 per year for a 3-year investment; and $1,329 per year for a 4-year investment. For the individual student, required future income differentials are less because no student covers the full cost of his education and many students desire to attend college for reasons other than future monetary return. Except for females who attend college for less than 4 years, current differences in median income between those who have received a high school education only and those who received 4 years generally exceed these amounts stated above at most age levels. (These income differentials are shown in appendix table A–29.)

The differences in median income are adjusted to take into account labor force participation. They are for the average college student and high school graduate, whether or not he or she was receiving income. The estimates are derived by multiplying Census medians for those with income by the corresponding labor force participation rates by age, sex, and level of education, prior to obtaining the difference. The differential in income at any age depends upon differences in median income between the college student and high school graduate, including the incremental income which can be ascribed to greater or smaller labor force participation. Thus, the benefits calculated for college-educated women account not only for higher rates of income but also for their more intensive labor force participation.

While discussing rates of return, it may be fitting to mention that preliminary analysis of income data for graduates from various types of institutions, made by Professor Danière, indicates that an average student who upgrades himself by attending a more expensive institution may very well receive an 11-percent return on his investment. Thus, the benefit/cost ratios for loans to upper quartile students may even be higher than the benefit/cost ratios for subsidizing poor students to go to college. This substantiates our prejudice: it pays to lend to the rich.

The question whether the public should increase the share of its limited resources now devoted to subsidizing students and institutions should be looked at from an angle different from the one used in analyzing individual decisions. It is the total marginal cost of educating additional students and the total marginal return on that investment which are relevant if the benefit/cost ratio is to be measured in purely monetary terms. Information is not available to estimate this return. But if a program gives a potential postsecondary student who has the capacity to learn an opportunity to enroll in college, the Nation may be discharging the more important social goal of equalizing opportunity.

6. Graduate Student Aid

The analysis of graduate student financial assistance is complex because of the vast proliferation of Federal programs. It may come as a surprise that OE contributes only one-third of the total Federal aid to graduate students. Even within the Health, Education, and Welfare complex, the OE contribution to graduate student support is just slightly over one-half of the total.

An estimate of Federal graduate support for 1966–67 by agency is shown in table 12. In addition to the usual tabulation of student aid for scholarships and fellowships, the participation of graduate students in loan and work-study programs is included in this table. The total Federal aid to graduate students amounted to $441.4 million. Of this, $277 million was received in the form of scholarships, fellowships, and research assistantships. An additional $194 million was received in the form of loans, work-study grants, and veterans' assistance. (These funds exclude short-term training courses and other non-degree training institutes.)

Besides Federal contributions, other sources play an important role in financing graduate students. A study conducted by the U.S. Office of Education in 1965 provides some estimates of the sources of income of graduate students. These estimates are shown in table 13. It is interesting to note from that table that the outside earnings of students and the incomes of their spouses are an important supplement to the various stipends.

The same study made it possible to estimate non-Federal contributions to graduate student stipends. In 1963–64, roughly $5 million in fellowships and scholarships was provided by non-Federal sources, $5 million came from research assistantships over and above the Federal contribution, and $150 million was accounted for by some form of employment by academic institutions. (These estimates are presented in appendix table A–30). This table also shows the estimated level of contributions for 1966–67. These estimates are based on the assumption that fellowships and scholarships from non-Federal sources remained at the same level, that research assistantships increased at the same rate as research expenditures—8 percent a year—that the income from teaching assistantships and faculty appointments increased in proportion to the increase in enrollment, and that faculty salaries increased 5 percent a year.

TABLE 12.—*Federal support for graduate students, estimates by agency: 1966–67*

[Amounts in millions]

Agency	Amount[1]
Total Federal student aid	$441.4
Stipends	386.4
Department of Health, Education, and Welfare	167.7
National Institutes of Health	95.4
Office of Education [2]	56.8
Other	15.5
Veterans Administration	102.0
National Science Foundation	44.1
Department of Defense	37.2
National Aeronautics and Space Administration	22.9
Atomic Energy Commission	12.1
Department of the Interior	.5
Loans	55.0
Department of Health, Education, and Welfare	55.0
Office of Education:	
National Defense Student Loans	25.0
Guaranteed loans	30.0

[1] Estimates for predoctoral academic year programs. Estimates are for funds for student use only, exclusive of cost-of-education payments to institutions. Estimates of payments to graduate research assistants are included in agency totals.

[2] Includes estimated graduate student support from work-study program: $7 million.

The Federal share in graduate student support is thus estimated to be 58.4 percent in 1964 and 63.1 percent in 1967. Due mainly to the increase in veterans' assistance during the period, Federal aid to

TABLE 13.—*Source of income of graduate students, 1965*

Source of income	Percentage distribution of total income by source		
	All students	Full-time students	Part-time students
All sources..........	100.0	100.0	100.0
Scholarship..............	1.5	2	1
Fellowship...............	8.6	19	1
Teaching assistant........	6.2	11	3
Research assistant........	4.8	9	2
Faculty appointment......	3.2	2	4
Other employment........	51.5	18	74
NDEA loan.............	.6	1	—
Commercial loan.........	.7	1	—
University loan...........	.3	1	—
Savings.................	3.6	7	2
Spouse's earnings.........	12.6	17	9
Gifts, loans from relatives..	4.2	8	1
Other..................	2.1	3	1

Source: Office of Education survey of "Academic and Financial Status of Graduate Students, Spring 1965."

graduate students increased 50 percent between 1963–64 and 1966–67. The total graduate student population increased only 25 percent during this same period.

Determining the need.—In order to determine the total financial aid needed for graduate students to pursue their studies, it is necessary to determine the number of full-time equivalent (FTE) graduate students. This determination is complicated by several factors.

First, OE has not taken a census of graduate students since 1963–64. Estimates published currently are projections of past trends and do not take into account the recent infusion of nearly $200 million per year for graduate student support from VA and OE programs.

Another complication results from the flow of students into and through graduate programs. Studies of the National Opinion Research Center [1] (NORC) and the Bureau of Social Science Research for the National Science Foundation [2] have documented the complexity of graduate student study patterns at great length. Besides students who attend full-time until they receive their degree, there are students who alternate between full- and part-time study or between full-time and no study. The majority of students seem to interrupt their studies between the master's degree and the doctorate.

Finally, the present use of course load to distinguish between part-time and full-time students in graduate work leaves much to be desired. Some part-time students do not carry a full load of courses because they are writing dissertations or are preparing for comprehensive or language examinations; others are precluded by their institution from taking a full course load because they hold teaching or research assistantships.

Two methods may be used to approximate the number of FTE graduate students. The traditional method is to assume that part-time students study one-third of the time. Based on current projections of full-time and part-time students, this method produces a figure of 404,000 FTE graduate students in 1967. Thus, as projected by NCES, graduate students could be expected to increase to 492,000 in 1969 and 617,000 in 1973.[3]

An alternative is to assume that the FTE level in a given year is proportional to the number of master's and Ph.D. degrees awarded in that year, plus the total number of master's degrees and Ph.D.'s awarded in the following year and the number of Ph.D.'s awarded in the third subsequent year. Estimates based on this method would result in 331,000 FTE graduate students in 1967, 443,000 in 1969, and 512,000 in 1973.

Both estimates indicate that the number of graduate students is likely to increase by some 20 percent between 1967 and 1969 and that it will grow by some 50 percent over the base figure by 1973.

An additional number of students could be expected to enroll full-time if additional aid were available. For instance, in 1963 NORC asked part-time graduate students what inducements were needed to have them go to school full time. Up to 56 percent of the students would have gone to school full time if they had had additional stipend money. (The answers are tabulated in appendix table A–31.)

Rationale for graduate student aid.—Graduate student aid has usually been justified in terms of the American economy's need for highly trained talent. It has been argued that student aid increases the number of individuals with graduate degrees by permitting students to start their graduate careers earlier and reducing the likelihood that they will drop out before completion because of financial pressures.

All these arguments have some verisimilitude. For example, in the natural sciences, of the 1958 bachelor degree recipients who attended graduate school, 55 percent held a stipend, and 35.6 percent obtained a graduate degree by 1963. By contrast in social sciences and education, where the percentage of graduate students receiving stipends was only 36 and 17 percent respectively, the percentage of graduate degree recipients during the 6-year period was lower: 29 and 16 percent for the two disciplines. The availability of stipends was also closely correlated with the percentage of students engaged in full-time study. Natural sciences, with the highest proportion of students benefiting from stipends, had the highest percentage of full-time students, and education and business were in the cellar in terms of both the share of students supported and the share of students who studied full time (see appendix table A–32).

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[1] National Opinion Research Center, University of Chicago, *Graduate Student Finances*, 1963, September 1965.

[2] Bureau of Social Science Research, Inc., *Five Years After the College Degree*, Washington, D.C., 1966.

[3] U.S. Office of Education, National Center for Educational Statistics, *Projections of Educational Statistics to 1975–76*, 1966, p. 17.

The correlation between the proportion of graduates in full-time study and the proportion of degree recipients by discipline was .73. The correlation between the proportion of students who received stipends and those who studied full time by discipline was .71. The correlation between stipend recipients and degree recipients was .78.

Thus the availability of stipends accounts for approximately one-half of the variation in the number of degrees received by field of study. An independent study by NORC of graduate student patterns in 1963 came to essentially the same conclusion.

If data are controlled for academic level and grade-point average, rates of full-time study are at least twice as high for stipend holders as others.[4]

There appears to be a fair relationship between the availability of aid and the number of candidates for master's and Ph.D. degrees. A relationship also exists between the availability of aid and the length of time between completion of one degree and the start of work towards a higher degree. The amount of aid, it appears, serves to increase the number of persons who obtain degrees in a given period rather than to shorten the average time between a B.A. and a Ph.D.

During the period 1920–61 the length of time between the receipt of a bachelor's degree and a doctorate was not much affected by the aid available. In major disciplines roughly 10 years elapsed between the award of a bachelor's degree and a Ph.D. This figure scarcely changed between 1920 and 1961. (The mean number of years taken to obtain the Ph.D. for various disciplines is shown in appendix table A–33.)

This finding is relevant to the policy of financing Ph.D. candidates. A preliminary analysis of NDEA fellowship awards (reproduced in appendix table A–34), indicates that a disappointingly low number of NDEA grant holders who received fellowships at the beginning of their Ph.D. studies completed their degree within the 3-year period. On the other hand, those who received grants when they were further along with their Ph.D. studies did complete their work during or soon after the grant period. Most degrees, it appears, will be received well after the NDEA grant expired.

Adequacy of graduate student aid.—Graduate student aid appears to have had some effect upon the supply of graduate degrees. The proportion of graduate degrees to total degrees granted has increased noticeably since 1950, when the Federal Government first took a major interest in stimulating graduate enrollment (see appendix table A–35). Three percent more master's degrees were granted in the 1960's than could be expected from the extrapolation of the trend over the preceding three decades. In the case of Ph.D's, the expected production was exceeded in the 1960's by nearly 10 percent.

Rates of return.—The level of subsidies to graduate students probably is not high enough to make the returns from the student's investment in graduate study as high as the returns to individuals who stopped their education at the bachelor's level. For instance, Hanoch[5] has estimated that the average internal rate of return to white males in the Northeast from undergraduate education was 9.6 percent, compared to 8.7 percent for those who had had some graduate school work.

An estimate, using 1960 census data, indicates that at age 22 the present value of graduate study is $15,000, if the student's income stream is discounted at 6 percent. If we assume that it takes the equivalent of 2 full-time years of graduate study to get a master's degree and an additonal 3 years to get a doctorate, the average degree recipient in 1966–67[6] had spent the equivalent of 2.1 years of effort in graduate work. His foregone income, according to 1960 data, was $13,200. The average Federal subsidy provided to him, at $1,963 per year,[7] was $4,123 for the 2.1 year period. Hence his net income loss was about $9,100. The rate of return which will equate his future income with the value of his net outlay is 7.9 percent. This is not an exceptionally high rate of return, if one takes into account the risks of failure and the labor involved. Obviously psychic returns play an important role in the decision to obtain a graduate degree.

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[4] NORC, *Graduate Student Finances, 1963*, p. 106.

[5] Giora Hanoch, *Personal Earnings and Investment in Schooling*, University of Chicago, December 1965 (dissertation).

[6] Degree recipient data in NCES, *op. cit.*, p. 27–36.

[7] See table 14.

A marginal note should be added to the current subsidy pattern of the Federal Government. Table 14 shows the average Federal expenditure per degree awarded in 1964 (with the master's being weighted at one, and the Ph.D. at two). It will be noticed that the subsidies are heaviest for degrees in physical science and much lower in behavioral sciences and humanities. The surprising entry in table 14 is the extremely low subsidy per graduate degree in education.

TABLE 14.—*Mean Federal expenditure for student aid per degree granted, 1964*

Field of study	Amount
All fields	$1, 963
Natural sciences	7, 580
Engineering	1, 657
Social sciences	1, 939
Humanities and arts	449
Agriculture	1, 410
Education	267
Other	3, 183

Source: OE survey of "Federal Funds for Education and Related Activities, 1961-1964."

7. Aid for Facilities Construction

The Higher Education Facilities Act of 1963 (HEFA) was passed in response to the financial crisis institutions of higher education faced in the 1950's and early 1960's. The act provides loans and grants for the construction and rehabilitation of academic and related facilities.

The involvement of the Federal Government in higher education construction predates this act. As early as 1956, Federal Government funds accounted for 20 percent of college and university construction expenditures. Ten years later Federal contributions for this purpose had increased fivefold, but the proportion of the Federal contribution to the total construction cost had scarcely changed.

Federal aid to higher education construction before 1964 included funds granted by the National Institutes of Health and the National Science Foundation. This aid has been expanded under the authority of the Higher Education Facilities Act of 1963. (A full listing of Federal programs supporting college and university construction is provided in table 15.) A summary of the provisions of this act, as amended in 1966, is provided below.

Title I authorizes grants, to be distributed by formula among the States, for the construction of undergraduate academic facilities for public community colleges, public technical institutes, and other institutions of higher education. It specifies that 22 percent of the funds appropriated for fiscal year 1966, 23 percent for fiscal year 1967, and 24 percent from fiscal year 1968 on, must be allotted to public community colleges and public technical institutes. To receive funds, a State must submit a State plan outlining the State's construction priorities.

Title II authorizes grants to institutions of higher education and to cooperative graduate center boards to assist in the construction of graduate facilities. The title limits Federal funds to no more than 33⅓ percent of the total cost for any given project.

Title III authorizes loans to public and private community colleges, technical institutes, and undergraduate and graduate institutions of higher education for construction of academic facilities.

In effect, funds provided under the Higher Education Facilities Act covered roughly 15 percent of the outlays of higher education institutions for all construction work in the academic years of 1965–67. An

TABLE 15.—*Federal programs which provide assistance to higher education institutions for construction and rehabilitation projects*

[Amounts in thousands]

Program name	Estimated obligations	
	1966	1967
Grants for acquisition of equipment, Office of Education	$15, 000	$14, 500
Higher Education Facilities Act, Office of Education	632, 700	722, 744
Library assistance, Office of Education/Public Health Service	10, 000	35, 500
Research facilities and equipment, Office of Education	20, 000	12, 400
Health professions teaching facilities, Public Health Service	106, 792	160, 000
Health related facilities, Public Health Service	65, 310	25, 000
Gallaudet College-Howard University, Department of Health, Education, and Welfare	5, 493	10, 043
Agricultural research facilities, Department of Agriculture	2, 000	0
Colleges in territories, dependencies, Departments of Defense/Interior	1, 454	696
Center for Cultural and Technical Interchange, Department of State	0	250
Nuclear training equipment, Atomic Energy Commission	1, 528	949
Specialized facilities, National Aeronautics and Space Administration	8, 000	7, 000
Specialized research facilities, National Science Foundation	27, 600	30, 000
Institutional science program grants, National Science Foundation	39, 100	24, 000
College housing loans, Department of Housing and Urban Development	276, 006	333, 000

additional 5 percent was provided by other Federal agencies. HEFA obligations during that period broke down as follows:

- In 1965 $240 million was obligated under title I. Of this amount some $47 million went to public community colleges. In 1967 an estimated $455 million was obligated, of which $100 million went to public community colleges.
- Obligations under title II for the construction of graduate schools amounted to $60 million each year.
- Title III obligations for loans to public and private colleges, both undergraduate and graduate doubled between 1965 and 1967. In 1967 roughly $200 million was obligated.

During fiscal year 1965 and fiscal year 1966 HEFA obligations accounted for 28 percent of the total cost of construction projects of those institutions receiving awards. The annual rate of capital expenditures during these 2 years increased over the 1963 fiscal year for all sizes of institutions receiving grants in all geographical locations and for both public and private institutions.

An analysis of the distribution of funds under all titles indicates that public institutions have benefited most from titles I and II while private institutions have benefited more significantly from title III funds. Public institutions have received 66 percent of title I funds, 58 percent of title II funds, and 17 percent of title III funds, for a total of 56 percent of all funds distributed to all institutions. It should be noted, however, that the interest rate on HEFA III loans was changed in November 1966 from 3¾ percent to 3 percent. Since the 3 percent interest rate is more attractive to public institutions, we expect a greater participation of public institutions in the program.

Universities have received 39 percent of all funds distributed; liberal arts colleges, 32 percent; and junior colleges, 15 percent of all funds (see appendix table A–36 and A–37).

Data on the distribution of funds by size of institutions indicate that smaller institutions received a larger share of title I and title II grants than of all students enrolled. For example, institutions with 20,000 FTE students and over, enrolling 12 percent of the total FTE students, received 5 percent of the funds. Institutions with fewer than 1,000 FTE students, with 6 percent of the total FTE enrollment, received 20 percent of all the funds disbursed (see appendix table A–38).

The distribution of funds in fiscal years 1965 and 1966 by geographical location indicates that institutions in large Standard Metropolitan Statistical Areas—those with populations of 500,000 or more—received only 22 percent of the funds but had approximately 46 percent of the FTE enrollment. Institutions in smaller Standard Metropolitan Statistical Areas received 24 percent of the funds and accommodated 30 percent of FTE enrollment. Institutions outside of SMSA's, which account for 25 percent of the total FTE enrollment, benefited proportionately the most from this program as they received 54 percent of all funds obligated.

Grants and loans awarded in fiscal year 1965 and fiscal year 1966 under titles I, II, and III of the Higher Education Facilities Act supported the construction of approximately 73 million square feet in assignable area for instruction and library purposes, increasing assignable area by 27 percent.

The construction of facilities under the HEFA does not substantially affect average clock hours of instruction per student. This ratio was projected to be essentially unchanged after completion of new facilities. The shortage of space which occurred during the 1957–65 period resulted in more intensive use of classroom space.

Observations on the effectiveness of the construction program.—An obvious way of trying to assess the impact of the Federal subsidy programs of higher education is to make some assumptions about the savings which accrued to the institutions as a result of the grants and loans under the Higher Education Facilities Act of 1963. If it were assumed that institutions would be forced to borrow at the 6 percent per annum rate of interest and that the depreciation life of the buildings is 50 years, 8 percent of the grants for construction would be net savings to institutional budgets. In addition, if it were assumed that the Federal guarantee was worth 1 percent of the amount obligated in terms of savings in interest rate payments, the total savings from the program to institutions could be calculated. To date, $815 million has been obligated for construction grants; hence the savings from title I and II can be estimated at $62.5 million. In addition, another $2 million in annual savings accrued to institutions from the $200 million in loans. This total of slightly under $65 million is less than 2.5 percent of the total tuition bill paid for all institutions in the United States in 1966. For the institutions involved in the HEFA program, the subsidy probably exceeded 5 percent of their tuition receipts.

Empirically, we have been unable to detect any relationship between the share of construction underwritten by the various acts and increases in tuition. This may not be surprising in view of the tendency of institutions to establish tuition and fee rates on the basis of custom and the activities of some price leaders. Hence, the effect of specific subsidies on tuition and fees must be quite small and indirect.

A more promising way of looking at the effect of the subsidy for construction is to assume that roughly 300,000 student places were paid for by the Federal construction program. One could make the assumption that without this Federal activity enrollments would have been kept down by the same number. Given the tendency of higher education establishments to choose the best students which apply for admission, it is reasonable to assume that the academically poorest student would have been excluded. Under these circumstances about 34 percent of the students excluded would have belonged to the lowest income quartile, 20 percent to the third quartile, and 24 and 22 percent, respectively, would have been excluded from the high and second highest quartile. In other words, using this assumption, more than half of the benefit of the construction program would accrue to students from families with incomes below the mean.

An interesting sidelight on the effectiveness of the allocation of aid by geography and by size of institution may also be mentioned. State planning agencies encouraged smaller institutions to grow faster than large institutions. In effect, since institutions with large enrollments generally utilize space more efficiently than smaller colleges and universities, in the long run supporting the larger institutions more intensively would probably increase the effectiveness of the aid. Conversely, the emphasis on aid to smaller institutions reduced the share of construction subsidies to large cities, where considerable savings in student living costs could be effected if spaces were available.

8. Other Federal Programs Serving Lower-Income Students

This paper has concentrated primarily on student aid programs. It has also treated, though in less detail, the higher education construction program. Unfortunately, lack of time and staff precluded examination of all the other Federal programs presently aiding institutions of higher education. Mention should be made, though, of two programs: (1) College recruitment of underprivileged youngsters (Upward Bound, title II of the Economic Opportunity Act, and Talent Search title IV–A of the Higher Education Act); and (2) aid to developing institutions (title III of the Higher Education Act of 1965).

These two programs have several common features. They are highly innovative and, at first blush, seem like excellent candidates for rapid expansion if Federal budgetary stringency is relieved.

Programs to recruit college freshmen.—The Federal Government is making a substantial effort to increase the proportion of youth from the lowest socioeconomic classes who attend college. Much of the student aid program is oriented toward helping children of poor parents to enroll in school. In addition, the Upward Bound program, administered by the Office of Economic Opportunity, and the Talent Search program, administered by the Office of Education, are aimed at informing disadvantaged youth about (and motivating them to take advantage of) the opportunities of attending college. There can be little doubt that there will be a great desire to increase the funding of both programs in future years. However, there appears to be little awareness of how the recruitment program fits into the total aid picture, what the uncertainties of these investments are, and what the potential scope of the program as a whole may be.

The ability of potential students.—The model described in Chapter 4 gives us an opportunity to evaluate the potential benefit of extending financial aid by socioeconomic and ability quartile and to estimate the characteristics of students who—because of lack of motivation—are not reached by the removal of financial barriers. Table 16 contrasts the percentage of students who are likely to be helped by additional financial aid from the two lowest socioeconomic quartiles with the percentage of students who still will not attend college because they lack the motivation of children of equivalent ability in the highest socioeconomic quartile. It is obvious that the number of students who could be motivated to go to college is still very large, even after financial barriers are removed. Almost four times as many students in the lower socioeconomic quartile would not attend college because of motivational factors as are likely to be helped by the removal of financial barriers. In the third-lowest socioeconomic quartile, about 25 percent more students would not attend college because of motivational factors, compared to those who would attend if financial barriers were removed.

TABLE 16.—*Potential share of students aided by removal of financial barriers and residual share who will not attend college because of the lack of motivation, by family socio-economic status quartiles*

Socioeconomic status	Percent of 12th grade students in each quartile
Third:	
Financial	13.3
Motivation	17.7
Low:	
Financial	7.2
Motivation	25.8

The majority of students not enrolling are in the two lowest ability quartiles. Table 17 shows the percentage distribution by socioeconomic class and ability quartile of potential college students who do not enroll because of lack of motivation. Over two-thirds of the potential students who could be helped through motivational efforts are found in the lowest half of the class.

While increasing the number of students going to college from low-income households would, at least in appearance, indicate an improvement in the distribution of educational opportunity, it is neither a necessary nor sufficient condition for improvement in the distribution of income. A change in the earning capacity of a disadvantaged youth must be preceded by improvements in his productive ability. If students drop out prior to the end of their second year in college, the benefits to their future productivity from

TABLE 17.—*Students who fail to enroll because of motivation, as a percent of all students who fail to enroll, by achievement quartiles for third and low socioeconomic status quartiles*

[Percent

Socioeconomic status	Achievement quartile			
	High	Second	Third	Low
Third	0	34. 3	38. 9	26. 8
Low	7. 1	25. 4	25. 0	42. 5
Total	4. 2	29. 0	30. 7	36. 1

their attendance are likely to be small. In fact, failure in college may offset whatever improvements in the disadvantaged students' self-image had been brought about by efforts to motivate them to enter college. Currently, there are indications that few of these youths will be able to successfully complete their 2- or 4-year programs even though they attend relatively low quality institutions.

Upward Bound.—Upward Bound is a program which is aimed at low achievers from the lowest socioeconomic classes. Most of the participants (over 73 percent) have averaged C or less in high schools where general achievement levels are low. Upward Bound attempts to change the achievement level and motivation of the students through remediation and a change in environment by offering them a summer program of study and other aid for the last 2 years of school. The cost is approximately $1,200 per year for each student prior to entrance into college.

Of the first group of Upward Bound students, 762 out of 953, or 80 percent, went to college and 388 of the 762, or 50 percent, entered the sophomore year.

Data from *Project Talent* show that only about 75 percent of all 10th graders from the lowest socioeconomic quartile and the lowest one-half by achievement finish high school. Thus, Upward Bound did increase somewhat the chances of these deprived children to graduate from high school. The dropout rate of 59 percent per year for freshmen is very close to the estimated rate in the model for youths in the lowest ability quartile of the lowest socioeconomic group. The current experience indicates that very few will finish more than 2 years of college. First indications are, therefore, that Upward Bound will successfully motivate the disadvantaged youth to enter college, but that the students will have difficulty completing their programs.

Talent Search.—Talent Search projects are aimed at youths in the lower, though not necessarily lowest, socioeconomic class. However, these projects seem to focus on students who have given indication that they have the ability and motivation to succeed in college. While the performance in nationwide examinations will not be high, their grades in high school will frequently be good. From a sample of nine project abstracts, it was learned that seven of the nine projects disseminated financial aid facts and other relevant information to a large number of high school youth and then provided systematic and sustained counseling and guidance to a small number of youths, usually under 1,000, who were able but needy. Two examples of these projects are the Higher Education Opportunities Committee Program (HEOC) to Locate and Encourage Students of College Potential from Inner-City Schools in Detroit and Project FAIT (Find and Inform Talent) in Georgia.

The Higher Education Opportunities Committee project enabled 20 counselor aides (youths who have graduated from inner-city high schools in the Detroit area), two counselors, and a directing counselor to go back to the high schools to raise the aspiration levels of the present 10th, 11th, and 12th grades of college potential. From 14 high schools, 2,561 referrals were processed by HEOC counselors and counselor aides. The group meetings, individual interviews, and participation in school programs by the counselor aides were major factors in a "personalized" approach. Data forms received at these meetings provided the information needed to set up parent-teacher conferences. The weekly contacts also produced the names of colleges in which the students showed interest. Meetings with the directors of admission and financial aid officials from Wayne State University, the University of Michigan, Eastern Michigan University, Western Michigan University, Oakland University, and the University of Detroit were arranged by HEOC for these students and parents.

The Higher Education Opportunities Committee reached almost 11,000 students. Almost 2,500 students were provided with systematic and sustained counseling, while 248 students were referred to other institutions or agencies for further guidance. It is estimated that about 500 students have been admitted to, or have entered, academic institutions of higher education. The total cost of the project was $129,000, with Federal contributions amounting to $65,000.

Project FAIT was responsible for identifying and informing students in 128 high schools in Georgia. These schools accounted for 118,586 grade 9–12 pupils. The pupils, contacted through their counselors by members of FAIT's Coordinating Council, were informed of available postsecondary financial aid. The entire high school student population, which included the pupils of FAIT high schools, was informed by flyers which listed the number of scholarships, loans, and work-study programs available in postsecondary schools within commuting distance of their homes. They were also informed of two showings of FAIT's educational television film, *Man on 3rd*, by announcements over their school public address system, by postbills sent to each of the 506 high schools, by newspaper and TV Guide articles, and by letters from the Coordinating Council members.

In addition to these efforts, Project FAIT prepared and sent a 218-page *Georgia Counselor's Guide to Financial Aid Information* to each high school counselor and librarian, each financial aid officer and librarian of the postsecondary schools of Project FAIT, each Neighborhood Youth Program and Upward Bound Program Director in Georgia, and each Talent Search contract holder in the United States.

Project FAIT identified 4,250 able but needy students. Personal and academic information on these students was obtained from an identification form completed by professional Staff members of the pupil's high school. A computer printout about these students was sent to 88 postsecondary institutions in Georgia and in nearby States.

The total cost of the FAIT project was $73,500, with a Federal contribution of $57,700.

Evaluation of Talent Search programs will not be possible until later this year, when the first contacts will have completed their first year of post-high school experience.

Aid to developing institutions.—Title III of the Higher Education Act of 1965 provides for special aid to promising institutions which are trying to better themselves but which have difficulty in finding access to funds because they are isolated or outside of the "mainstream of American education." The act does not contain a precise definition of a developing institution. It sorts out eligibles from noneligibles through a set of exclusions. For instance, institutions eligible for aid must admit only persons holding a high school diploma or the equivalent, must be chartered by the State, and must award a bachelor's degree if they are 4-year institutions, or offer courses creditable towards a bachelor's degree or certification in a semi-professional field if they are 2-year institutions. Applicants must present proof that they have met these requirements for 5 academic years. They must be accredited or, in the judgment of a nationally recognized agency, be making reasonable progress towards accreditation. In summary, the act is designed mainly to help conventional, long established, and financially weak institutions.

During the first year the act was in effect, fiscal year 1966, 262 schools applied for grants. In fiscal year 1967, 558 applications were received. The box score of approvals and disapprovals appears in appendix table A–39. The approvals were heavily weighted in favor of predominantly Negro colleges and schools with low expenditure per student.

In 1966, 127 institutions received awards, and in 1967, 411 received awards. The total amount of money was $5 million in 1966 and $30 million in 1967. The average grant in 1966 was $39,370 and in 1967, $72,933. Two hundred of these awards were planning grants, which decreased the average amount per institution (see appendix table A–40).

Two types of activities are financed with title III funds:

1. *Cooperative arrangements* (or consortia) for pooling resources between weak institutions, and between weak institutions and stronger institutions, business firms, or educational consultants. In 1967, more than half of the $18.7 million allocated for cooperative ventures was used for curriculum development, intensive programs for entering students, and faculty development. Two million dollars were allocated for small planning grants to help some weak schools study ways of improving themselves.
2. *Teaching fellowships*, with comparatively liberal stipends and dependent allowances, designed to augment faculty, reduce teaching loads, make new courses available, or to replace regular faculty on leave for further graduate study. In 1967, $11.3 million were allocated for fellowships.

An analysis based on a 25-percent sample of recipients in 1966 and 1967 indicates that the average enrollment in an aided school was slightly over 770 students in 1966 and 929 in 1967. In 4-year institutions, the average was 813 and 938 in each year; in 2-year institutions, 647 and 909. From an analysis of 1966 grant recipients, it can be inferred that the average faculty of these institutions is about 50 persons. About a dozen of these are likely to hold Ph.D.'s, roughly half the national proportion. Student/faculty ratios are likely to be about 20 to 1, about half as much again as in the average postsecondary school.

National Teaching Fellowships went to 411 institutions which needed roughly 5,000 Ph.D.'s to make their ratio of Ph.D.'s to total faculty equal to the national average. The 1,523 National Teaching Fellowships would certainly help fill the gap.

Unfortunately, this optimistic judgment is based on two assumptions: The first is that the teachers relieved by fellows to do graduate work will get their Ph.D.'s during the period of the fellowship or that teachers who came to these schools would stay there. We have seen that even in the NDEA fellowship program, a large percentage of 3-year fellowship holders did not get their Ph.D.'s during the tenure of their fellowship.

The second assumption is that the relieved teachers will return to the institutions from which they came or to similar institutions. If developing institutions are like developing countries, these expectations are not likely to be realized. According to the former chancellor of one of the leading Asian universities, the return rate of young faculty members going off to study was less than a third. The rest, after increasing their qualifications, stayed in more prosperous surroundings. Only the worst returned.

The effectiveness of this fellowship and other aid, through consortia, to developing institutions will depend upon their ability to upgrade their surroundings. According to the fragmentary information for 1966, their salary levels are very low (less than $6,000 a year per staff member) and their library collections average only some 50,000 volumes. These and other similar deficiencies do not make them attractive institutions.

There is great doubt in educators' minds that the consortium can improve the character of an institution's instruction unless there are changes in the critical mass of financial support. Most of the schools supported are small, their size is uneconomic. Their expansion is hampered by their total dependence on tuitions. Whenever a number of weak schools or weak and strong schools in the same geographical area cooperate, the Federal Government may perhaps do well to encourage the further step of consolidation. Perhaps the idea of a Federal dowry, a payment to a stronger school to amalgamate with a weaker one, may not be out of place.

Whenever a strong school cooperates with a weak school, the relationship is no more easy than between a rich and poor relative. There is a long history of such consortia having come to naught, and currently there is little evidence that the new ones are affecting the character of instruction, be it course content or teaching method, in any quantifiable way. On the other hand, a number of members of consortia have reported numerous instances of friction between the poor and the rich school: denial of the right to choose applicants for the coming year, refusal to exchange faculties, etc.

The awarding of more than 200 planning grants in the first 2 years threatens the integrity of the title III program. If the schools receiving these grants meet the program criteria, they should be able to make strong cases for additional project support. But spreading the limited program resources among them would seem to run counter to the objective of concentration. On the other hand, the awarding of a large number of planning grants with the intention of funding only a few seems to be a waste of limited resources. If the idea is to promote competition for project support among developing institutions, it seems fair to question whether they can afford the luxury of competition, especially since the program stresses cooperation.

Over one-half of the students in the developing colleges which received grants in 1966 and 1967 attended schools where the average expenditure per student was less than $1,000; a few were in schools spending above the national average. It is significant that tuition and fees in many of these schools are also low, less than $400. This is especially true of predominantly Negro colleges (see appendix table A–41 and A–42).

It should be noted that the act does not address itself to predominantly Negro schools. Less than one-third of the schools which received grants were predominantly Negro, and roughly one-half of the money was allocated to predominantly Negro schools. Nevertheless, close to 80 percent of the Negro colleges, both accredited and unaccredited, were aided in 1967.

The problems of these developing institutions are size and money. In the majority of cases there is very little money to build upon. Eight hundred and fifty dollars per year (the average expenditure in schools with less than $1,000 expenditure per student) cannot, by any stretch of the imagination, provide adequate postsecondary education. Only if the miracle of the loaves and fishes can be repeated in the 20th century, can a grant of $79 per student (the average grant in 1967) cover the disparity between these institutions and those in the "mainstream of American education" which they are trying to join.

The issue, then, is: Should this kind of aid be stepped up considerably, or should it be abandoned?

Title III did not play a very important part in institutional finances. For instance, in addition to $5 million from title III, grant recipients benefited from other OE programs. For instance, $17.5 million in student aid was provided to students attending those institutions. The average allocation per student under title III in 1967 was $79, up from $51 in 1966. Although a few institutions received as much as $200 per student, most got just a token amount.

It seems reasonable to conclude that with the limited amount of money which has been appropriated, aid should be concentrated as much as possible, certainly much more than it has been to date. It also seems reasonable to conclude that the aid should go to those schools which are likely to become integrated institutions. In the case of Negro schools, their quality has to be raised sufficiently to attract white students. In the case of white schools, aid should be given only to those schools which are willing to take substantial numbers of Negroes.

In the event additional appropriations become available, thought should be given to three innovations: (1) The building of a network of integrated junior colleges through the South; (2) payments for consolidation of smaller schools, especially Negro schools; and (3) permitting developing institutions to use title III funds to supplement HEFA money.

9. Projection of Requirements for Major Higher Education Programs

The examination of current aid programs for higher education in chapters 5, 6, 7, and 8 indicated that on balance the current programs, with a few exceptions, meet the objective of equalizing educational opportunity quite effectively. For instance, we estimate that about 100,000 freshmen primarily from lower income groups entered postsecondary education because of the existence of aid programs.

This chapter will examine the level these programs are likely to reach in the next 5 years and suggest some new programs to help meet the financing needs of the higher education sector.

It may be well to begin by summarizing some of the findings:

- Student aid programs will need to be increased substantially over present levels. The total number of dollars disbursed for student aid will have to double between 1966–67 and 1968–69 if financial constraints are to be removed from college attendance. Even under a modest maintenance-of-effort assumption, explained below, student aid would have to increase some 50 percent between these 2 years and would have to double by 1972–73.
- Increased attendance is going to place further strain on the finances of higher education institutions. By 1968–69 about $0.5 billion of the incremental deficit is projected as a result of increased enrollments resulting from Federal aid programs. This amount is projected to increase to $1.4 billion by 1972–73.
- Annual outlay for plant and capital fund will not increase drastically in the next few years. However, because of the shift from cash financing to debt financing, the burden of debt servicing will continue to take an increasing share of institutional budgets.

Undergraduate student aid requirements.—Student aid requirements are based essentially on the data presented in Chapter 4. Two projections of enrollments are used to develop student aid requirements: the medium projection described in Chapter 4 and a lower projection halfway between the low and the medium projection. The latter projection can be considered a maintenance-of-effort projection: it sets aid at a level necessary to follow through commitments already made to poor students and allows future generations of needy students to enter college at the same rate they entered in 1966–67.

The amount of student aid required for the medium projection was calculated as follows:

1. The number of students and their distribution by socioeconomic status quartile was derived from the model described in Chapter 4.
2. Estimates of the total cost of education, the family contribution, and the remaining gap were calculated in the same manner.
3. It was assumed that for students in the higher income quartile, outside aid would continue to provide 5.8 percent of the total outlay for education.
4. For students in the second and third socioeconomic status quartiles, it was assumed they would borrow the same amount per capita through the guaranteed loan program as students in the lowest quartile. It was further assumed that the amount earned through work-study and other work would be the same for all three lower quartiles. In other words, varying proportions of the gap in third and second quartiles—$265 and $309 per capita—would be filled without the aid of Federal, State, or institutional programs through outside work. A remaining gap of $60 per student in 1968–69 and $100 in 1972–73 remained to be filled either from savings or additional work.
5. The total gap in student need in the fourth (lowest) quartile and the need gap modified as described in (4) for the second and third quartile were filled with per capita allocations along the 1966–67 pattern for NDEA loans, institutional aid, and work-study programs. Per capita contributions of the Veterans Administration were roughly doubled, in accordance with the VA estimate that aid to veterans will double between 1966–67 and 1968–69. The remainder of the

gap was to be filled with educational opportunity grants in all but the highest quartile.

The per capita allocations are shown for 1968–69 and 1972–73 in appendix tables A–43 and A–44; results of this calculation appear in appendix tables A–45 and A–46.

The allocation of aid needed for the maintenance-of-effort projection was made as follows:

1. The number of students and their distribution were calculated by averaging the number of students enrolled between the low and medium projection described in Chapter 4.
2. Estimates of the total cost of education, family contribution, and remaining gap were calculated in the same manner.
3. The identical assumption about the requirements for outside resources in the highest socioeconomic status quartile was made as in the medium projection.
4. Essentially the same procedures were used to fill the gap in the second and third quartile except that the remaining unfilled gap was allowed to increase to $86 in 1968 and $127 in 1972–73 in the second quartile, thus wiping out all EOG grants there; and in the third quartile it was set at $280 in 1968–69 and $434 in 1969–73 after students in that quartile were expected to borrow and work as much as students in the lowest quartile.
5. The same procedures were used to fill the remaining gap as under the medium projection except that for the lowest quartile the gap of $73 per student which existed in 1966–67 was allowed to remain. This amount was subtracted from the EOG total.

The resulting per capita allocations for 1968–69 and 1972–73 appear in appendix tables A–47 and A–48 and the estimated volumes of the student aid program in appendix tables A–49 and A–50.

Graduate student aid needs.—Graduate student needs were estimated by following the assumption in chapter 6 that the total graduate student full-time equivalent would increase by 20 percent between 1966–67 and 1968–69, and 50 percent between 1966–67 and 1972–73. In addition, it was assumed that real wages in the economy would increase 3 percent and that consequently similar adjustments would be made in graduate student stipends. Hence, the maintenance of effort at 1966–67 levels would require an increase in stipends of 39 percent for 1968–69 and 89 percent for 1973. Graduate student aid need was thus assumed to increase from $704 million, the 1966–67 level, to $980 million in 1968–69 and to increase further to $1,330 million in 1972–73 (see appendix table A–51).

Despite these relatively high rates of increase in enrollment, it appears that graduate student financing will require only moderate expansion of Federal money during the coming 5 years. Since the bulk of non-Federal contributions to graduate finances are payments for services rendered, it is assumed that even if fellowships and scholarships from private sources stay at their present level or decline, this form of financing will continue to contribute heavily to graduate student finances.

The Veterans Administration is likely also to contribute quite heavily to closing the gap in the early years. It was assumed that the same share of the VA's student support would accrue to graduate students as it did in 1966–67 and that an additional $102 million would be available for this group in each of the two periods considered in this paper.

The Office of Education programs such as guaranteed loans, NDEA loans, and work study were assumed to contribute 20 and 50 percent more respectively to the graduate support (in proportion to the increase in students). Hence the residual contribution of the Office would not have to be much higher than presently provided if non-Federal financial aid were to remain at present levels. One should remember that these figures do not take into account any improvement of OE support to graduate student training in the field of education itself.

Total student aid.—The total student-aid package described above could pump $1.9 billion into students' pockets in 1968–69 and $2.7 billion in 1972–73 at a budgeted cost in Federal appropriations of $1.0 billion and $2.1 billion in those 2 years if the medium assumption were adopted. If the maintenance-of-effort route is to be followed because of budget constraints, then the amounts of grants and loans to students will amount to $1.4 billion and $2.0 billion in 1968–69 and 1972–73 respectively. The amount of budget obligations estimated to support these amounts is $654 million and $1,005 million respectively (see table 18).

The proposed package would require raising considerably the level of educational opportunity grants, roughly doubling work study, and keeping the level of loans down to somewhere near a billion dollars in 1968–69 and $1.5 billion in 1972–73.

The loan figure is likely to raise eyebrows. Estimates for the demand for loans has been put as high as $4.2 billions in 1972–73. We do not believe that such a high demand for loans will be met by the private sector. If anything, the projection in this

TABLE 18.—*Total student aid requirements, Office of Education, 1968–69 and 1972–73*

[Dollars in millions]

	1968-69		1972-73		Budget obligations			
					1968-69		1972-73	
	Medium projection	Maintenance-of-effort projection	Medium projection	Maintenance-of-effort projection	Medium projection	Maintenance-of-effort projection	Medium projection	Maintenance-of-effort projection
Guaranteed loans.	$743	$661	$942	$849	$88	$81	$136	$122
NDSL...........	450	393	552	480	217	190	267	232
Subtotal loans.....	1,193	1,054	1,494	1,329	295	271	403	354
Work study......	221	188	273	228	221	188	273	228
EOG............	475	145	875	343	475	145	875	343
Other...........	50	50	80	80	50	50	80	80
Total.......	1,939	1,437	2,722	1,980	1,051	654	2,113	1,005

chapter is somewhat optimistic as it assumes that students in all the three lowest quartiles will have access to the guaranteed loans at the rate of $170 per student, the rate of borrowing in the lowest quartile in 1966–67. This projection also increased the per capita loan for students in the highest quartile to $86 in 1972–73 from the $72 average in 1966–67 to allow a constant proportion of rising instructional costs to be covered by some type of aid.

The loan program has received criticism from two opposite angles. On the one hand, it has been criticized for placing an unreasonably high burden on students who benefit from it; on the other hand, it has been charged that the major part of the subsidy cost of the program was being shifted from the Federal Government to private ledgers. These criticisms are only seemingly contradictory and do deserve some discussion.

A student who borrows $4,000 in guaranteed loans to finance his undergraduate studies has the alternative of repaying the loan in the 10 years after his graduation at the rate of $38.64 a month (if the loan was made at 6 percent). This amounts to $463 a year, or roughly 6 percent of the income differential from college to a male college graduate aged 25 to 34. The same amount is about 20 percent of the income benefit to the average female in the same age bracket, including housewives who receive no income. At first blush, this does not seem to be a very burdensome price to pay for a benefit which will continue well beyond the repayment period. On the other hand, persons entering fairly low-paying professions, such as school teaching, will receive less of a benefit than the average. To them, $463 a year may be a real burden since the effect of college education on their earnings is smaller. This is one of the reasons why OPPE favors the continuation of the NDEA loan program. (The other reason for favoring that program is that it reaches more students in poor circumstances than do guaranteed loans.)

It is also argued that guaranteed loans are being subsidized by the private sector. This is also true. Small personal loans generally carry an interest rate of 12 percent. Student loans are also small in amount and require a great deal of handling and administration. The present value of $4,000 taken out over 4 years to be repaid over the next 10 years, discounted at 6 percent, is approximately $2,703. The present value of the same repayments discounted at 12 percent, is $1,922; about two-thirds of the amount at 6 percent. Thus, it can be argued that the private sector would be subsidizing roughly a third of the amount lent.

In addition, the Government spends about 28 cents in interest subsidy for every dollar which is lent over a 10-year period. Because 38 percent of the money is currently lent to students in the top income quartile, it has been necessary for the Government to obligate 45 cents for each dollar channelled to students whose parents are in the botton three quartiles.

This discussion has been leading to the following point: Although the loan terms are extremely attractive to borrowers, there is going to be continuous opposition to expand the loan program by financial institutions, and this opposition will curb the program's growth.

In the event interest rates decline, it is suggested that the Federal contribution to the guaranteed loans be scaled down, and that the students' interest payment stay at 3 percent. Under current regulations, a borrower who banks the money receives a windfall of 5 percent per annum (the average interest rate on savings deposits) during the first 4 years and 9 months of his college career. The windfall is continued through out the repayment period, as interest accrues at the rate of 3 percent on the loan and at the higher rate on the money deposited.

A word needs perhaps to be said about the level of the work-study program. Students are paid very low wages for working, and there is some doubt that the work they produce is helpful to the institution. We did not have an opportunity to examine the work-study program in detail this year. Yet, our analysis has highlighted two significant points: (1) The highest proportion of funds in this program goes to low-income students, and (2) it is possible that the institutions which they attend are sufficiently strapped financially to benefit from the work of these students in libraries, routine maintenance, and the like.

Current institutional costs and deficits.—Increasing enrollments are, of course, going to strain institutional finances. In 1966–67 the average institution in the United States charged $567 in student fees and tuition. The instructional costs per student were roughly $1,300 per year. In addition it provided from its own resources student aid averaging $65 per student enrolled. The deficit per student was therefore $798. The total deficit can be expected to increase to $885 or $890 depending on the projection of enrollment used. Tuition is expected to increase to $624 per student and costs to $1,447, and student aid (taken from appendix tables A–43 through A–50) to amount to $60 to $75 per student. In 1972–73 the deficit will further grow to $1,118 or $1,124 per student, as tuition is projected to rise to $738 and instructional costs to $1,793 plus aid of from $63 to $69 per student.

These projections, reproduced in table 19, extrapolate the experience between 1955–56 and 1965–66 (the last year for which detailed data could be estimated). They are based on the assumption that tuition and faculty salaries will increase 5 percent per year and that student/faculty ratios will continue to deteriorate slightly.

In order to estimate the size of the total deficit, further projections of full-time equivalent (FTE) students had to be prepared. The number of FTE students was estimated by using as a base the number of full-time undergraduate students projected under the maintenance-of-effort and medium projections, as described in chapter 4, and adding (1) 10 percent as an estimate of full-time graduate students, and (2) varying percentage, depending upon the projection, to estimate the FTE for part-time students.[1]

The estimates for full-time equivalent students derived by this method show an increase from 4.9 million students in 1966–67 to between 5.8 and 6.0 million in 1968–69 and a further rise in enrollment to between 6.8 and 7.2 million students in 1972–73.[2] Using these enrollment estimates, the total instructional deficit is projected to increase from $4.0 billion in 1966–67 to $5.1 or $5.3 billion in 1968–69 and $7.5 or $8.1 billion in 1972–73. Hence, additional financing of between $1.1 and $1.3 billion in 1968–69 and of between $3.5 and $4.1 billion will be required to finance this growing deficit in 1972–73.

TABLE 19.—*Projected institutional deficit on current educational account, 1968–69 and 1972–73*

Year, projection	Full-time equivalent enrollment (Thousands)	Per capita					Total deficit (Millions)	Grants for graduate study (Millions)	Net deficit (Millions)
		Instructional cost	Student aid	Total outlay	Tuition	Deficit			
1966–67	4,937	$1,300	$65	$1,365	$567	$798	$3,940	$214	$3,726
1968–69:									
Maintenance	5,771	1,447	62	1,509	624	885	5,107	225	4,882
Medium	5,988	1,447	67	1,514	624	890	5,329	225	5,104
1972–73:									
Maintenance	6,750	1,793	63	1,856	738	1,118	7,546	375	7,171
Medium	7,237	1,793	69	1,862	738	1,124	8,134	375	7,759

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[1] The total number of part-time students was estimated for the low projection by taking the ratio of part-time to full-time students estimated by NCES. This was considered to be too high for the other projections in the light of the latest information from fall enrollments 1966–67. Hence, one-third of the difference between the low and medium, and the low and maintenance-of-effort enrollment projection was estimated to represent shifts from part-time to full-time study. FTE student figures were calculated by multiplying the remaining part-time students by one-third and adding the resulting number to full-time undergraduate students and estimated degree-credit FTE graduate students.

[2] NCES projections for FTE enrollments for the years described above, are as follows: 1966–67, 4,836,000; 1968–69, 5,545,000; 1972–73, 6,370,000.

Where did this financing traditionally come from? In 1966–67 about $214 million was derived from institutional grants made by the Federal Government matching its graduate student stipends. Slightly over $900 million came from endowment income and gifts. The bulk of the rest came from States, which contributed over $3,300 million. Local government contributed less than $300 million.

Despite the fact that Federal payments to institutions tied to graduate student support outside of the VA is expected to increase only slightly in the next 2 years and to grow by a mere $160 million in the next five, the financing for the growing deficit may conceivably be found, in the aggregate, in traditional sources (see appendix table A–51). For instance, if gift and endowment income were to grow at an 8 percent rate (the rate of growth between 1955–56 and 1965–66), it would contribute about $1.1 billion in 1968–69 and $1.4 billion in 1972–73. Local government contributions growing at 10 percent a year, in line with past trends, would contribute $0.4 billion in 1968–69 and $0.5 billion in 1972–73. The remaining deficit could easily be filled by the States if they continued to increase their allotments to higher education at the past decade's rate of 12.6 percent. As a matter of fact, even for the medium projection, State contributions could reach $3.7 billion and $5.9 billion if the rate of growth of contributions increased 12.3 percent per annum.

The real question is whether States, which increased their contribution to higher education by $2.0 billion in the past 10 years, will be willing to increase their contribution by a further $2.5 billion in the next 5 years. There is contradictory evidence on this count: New York and New Jersey are stepping up their expenditures for education at an impressive pace. By contrast, the California higher education budget was trimmed quite drastically this year. State college and university presidents in the midwest, most notably Michigan, Wisconsin, and Ohio are complaining increasingly about the difficulty of getting their requested appropriations through the State legislatures.

Whether the Federal Government should step into the general institutional aid area is certainly a controversial issue. We will content ourselves with making two points in that connection: (1) About $1.3 billion of the instructional deficit of institutions in 1972–73 will be due to the effect of Federal student aid programs, if our model is to be trusted; and (2) if tuition rates go up faster than projected, this will affect Federal student aid budgets because 55 to 60 percent of the students enrolled in both 1968–69 and 1972–73 will be eligible for aid (if the present pattern of Federal aid is maintained).

The following conclusions may be drawn from these two observations: (1) Equity may prompt the Federal Government to start an institutional aid program, and (2) tight Federal budgets may cause policymakers to prefer subsidizing students to subsidizing institutions.

In case institutional subsidies are adopted, grants of $75 per FTE student and a 5 percent subsidy of the total cost of instruction may meet the equity criteria. We estimate the total cost of this program for 1972–73 to be $1.1 billion. This program, which may not strike the casual reader as an example of progressiveness, is nevertheless more progressive than others, such as the Ribicoff plan. If the middle classes are to be given relief from rising tuition, institutional aid may be a way to do it.

Public and private institutional finances.—Although the financial pressures of increasing enrollments can probably be handled by all postsecondary institutions in the next 5 years, the impact of both increased costs and more students is likely to be different on private and public institutions. It was mentioned in Chapter 3 that private institutions lost a share of the market of postsecondary students in the course of the past 10 years. Unless the costs of production of services by private colleges and universities change drastically, their resources will fall short of projected requirements by one-half billion dollars in the next 2 years and by a full billion dollars by 1972–73.

The current cost of producing 1 year of full-time equivalent instruction in a private institution was $1,572 per student in 1966–67. It was $1,051 in a public institution. The relationship between these costs has varied. In 1955–56, it was estimated that costs per student in a public institution were equal to or greater than costs in a private institution. During the intervening 10 years, improvements in the student-faculty ratio in the private sector and deterioration of this ratio in the public sector, partly due to the fast growth of cheaper 2-year institutions, and partly to higher rates of increase in faculty salaries in private schools, caused costs to rise more in that sector. Without a thorough understanding of the causes of these developments, however, it is difficult to project future trends.

It is a disturbing thought that the projected increases in instructional costs per student are based on the continuation of the trends in enrollment in private and public colleges. This in turn implies fast growth in the proportion of students attending lower-cost institutions such as 2-year colleges. The costs per student in private institutions have been increasing at the rate of 6.7 percent per year. If this trend is to continue, an increase of 210 percent in funds to subsidize students will be necessary. This would take $235 million in funds, Federal or other, to allow private institutions to keep their share of the market. Unless these funds are found, the private sector's share of students will decline to between 29 and 31 percent of total enrollments by 1972–73 under the maintenance-of-effort projections referred to above. About 2 million students will be enrolled in schools controlled privately. This projection is not inconsistent with past trends. In 1966–67 private institutions enrolled 33 percent of the total students.

By contrast, the projection of past trends in revenues of public institutions does not warrant this pessimism. It appears, if past trends are to be credited, that the projected increase in students can be accommodated in the public sector. If the costs of instruction in the private sector amount to $4.8 billion (assuming a 6- to 7-percent increase in costs, and enrollments of 2,080,000), the remaining costs, from $7.3 to $8.2 billion, will have to be financed by the public sector, if past trends of revenue continue. Whether they will or not, of course, is a moot point. which has been discussed above.

Capital requirements.—Physical plant will need to grow by about $9.0 billion by 1972–73 for the maintenance-of-effort projections under current standards for facilities per student.[3] This will require an additional $2.8 billion for replacement of current facilities, assuming a 2-percent replacement rate per year. About $0.7 billion will be required for debt retirement at a retirement rate of 2 percent per year. Thus, the maintenance-of-effort projection implies a total capital requirement of $12.5 billion between now and 1972–73, or about $2.5 billion per year. Plant-fund income has been received at the rate of about $2.5 billion per year since 1961. For 1965–66, $3.1 billion plant-fund income was received. Thus capital requirements are likely to be moderated substantially in the future.

Currently, between 30 and 35 percent of capital requirements are met by borrowing, with the bulk of the remainder provided mainly through private gifts and grants for private institutions and by State governments for public institutions. The Federal Government provides about 5 percent for each type of institution, net of loan insurance. Assuming that these proportions remain essentially unchanged, total outstanding debt will increase about $3.0 billion by 1972–73, an increase of $1.9 billion for public institutions and $1.1 billion for private.

Annual interest expense will increase from the current level of about $145 million for public institutions and $92 million for private to about $244 million per year and $141 million per year respectively by 1972–73.

The present construction program, discussed in Chapter 7, meets its stated objectives adequately. On the whole, the funds have been distributed fairly between States. Within States the institutions which had the most severe space deficit have been helped most. Also, smaller institutions received a larger proportion of the funds than their present enrollments warrant. As they grow to an economic size, it is hoped that their space utilization will become more efficient. Space is generally more effectively used in larger institutions than smaller ones. A saving of from 20 to 30 percent on space utilization is generally associated with an increase in enrollment from 1,000 to 10,000 students at which point it levels off, at least for public institutions (see table 20). According to some recent unpublished work by John Bishop of the HEW Office of Program Coordination, facilities costs are remarkably stable at about 15 percent of total costs of instruction. Thus, the subsidy to smaller colleges to expand space may be more effective in relation to cost than the average subsidy.

This saving in cost, which can be estimated as $75 or $80 per student, is dwarfed by the savings which may accrue to students who can continue to live at home and attend a college within commuting distance. The difference in the costs of living in a dormitory as contrasted to the imputed cost of living at home averages $300 per year. This amount may be especially important to children of poor parents. Since many of the small institutions are located outside

TABLE 20.—*Ratio of student spaces to number of students enrolled for public and private institutions by size of enrollment*

Enrollment size of institution	*Public*	*Private*
0 to 500	2. 11	1. 76
500 to 999	1. 52	1. 63
1,000 to 2,499	1. 32	1. 34
2,500 to 4,999	1. 26	1. 08
5,000 to 9,999	1. 06	. 95
10,000 and over	1. 08	. 85

Source: John Bishop, Office of Program Coordination, Department of Health, Education, and Welfare, Unpublished memorandum on costs of higher education.

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[3] Assuming an average of 150 square feet per full-time equivalent student and an average cost of $31 per square foot for additions and replacements.

of metropolitan areas, part-time employment opportunities are scarce. This may discourage attendance by poor students. Part-time employment is an important source of funds for children of parents with moderate means.

The Higher Education Facilities Act may very well need to be amended to permit the establishment of new institutions of higher education in metropolitan communities or in other areas where the number of college spaces is not sufficient to provide adequate facilities for local residents. The distribution of college spaces, full time and part time, by size of SMSA is shown in table 21.

Recruitment.—The discussion of Upward Bound and Talent Search has probably already tipped our hand with respect to the recommendations. These are: (1) Neither program should be expanded drastically until the financial needs of those students who have the motivation to go to college are met. (2) Neither program should be expanded drastically before greater effort is placed on increasing the number of successful students from low-income families and less value is placed on the number of freshman entrants. This is especially important, since members of minority groups do not seem to benefit, in terms of income, from a less-than-full college education. (3) Of the two programs, Talent Search is probably both cheaper and more effective since it concentrates on potentially good college risks in both the lowest and the next to the lowest socioeconomic quartiles.

Developing institutions.—The grants to developing institutions are spread too thin. OPPE does not believe that an average grant of $76 per full-time equivalent student is likely to bring these institutions into the mainstream of American education. OPPE would prefer the money to be used for (1) a network of integrated junior colleges in the South, (2) encouragement of consolidation of small schools through some Federal grant to meet the costs of consolidation, and (3) authorize the use of these funds to make permanent improvements or even matching other Federal funds for construction.

TABLE 21.—*Estimated higher education enrollment per 1,000 of total population in standard metropolitan statistical areas (SMSA): Fall 1965* [1]

SMSA size category	Population of universe [2] (In thousands)	Enrollment [3]			Places per 1,000 population		
		Total [4]	Full-time [5]	Full-time equivalent [6]	Total	Full-time	Full-time equivalent
3,000,000 or more	36, 598	746, 000	360, 000	454, 000	20. 4	9. 8	12. 4
1,000,000 to 3,000,000	35, 444	698, 500	437, 500	521, 667	19. 7	12. 3	14. 7
500,000 to 1,000,000	18, 804	577, 000	294, 000	371, 167	30. 7	15. 6	19. 7
250,000 to 500,000	17, 073	526, 000	391, 500	429, 833	30. 8	22. 9	25. 2
100,000 to 250,000	14, 150	821, 000	647, 000	696, 333	58. 0	45. 7	49. 2
50,000 to 100,000	2, 121	60, 000	47, 000	51, 000	28. 3	22. 2	24. 0
Outside SMSA's	68, 372	2, 312, 000	1, 850, 500	2, 004, 300	33. 8	27. 1	20. 3
Total U.S.	192, 562	5, 740, 500	4, 027, 500	4, 328, 300	29.8	20.9	23. 5

[1] Based on 20 percent sample of all institutions of higher education.

[2] 1965 estimates used where available; otherwise, based on 1960 census.

[3] Estimate based on sample.

[4] Includes full-time and part-time degree credit plus non-degree credit enrollment.

[5] Degree credit.

[6] Full-time equivalent degree credit enrollment; estimate based on assumption that 3 part-time equal 1 full-time student.

Technical Appendix

Definition of the OPPE Model for Enrollment in Higher Education

The size of opening fall full-time degree-credit undergraduate enrollment in year t is defined as:

$$E_t=\sum_{n}^{7}\sum_{i}^{4}\sum_{j}^{4}p_{nij}P_{ij}G_{t-n} \tag{1}$$

where,

G_t=The given size of the high school graduating class in year t

n=The number of years following high school graduation, $n=1, 2, \ldots, 7$

P_{ij}=The probability that a high school graduate is associated with the j^{th} achievement quartile and the i^{th} socio-economic quartile; $j=1, 2, 3, 4$; $i=1, 2, 3, 4$; $\sum_{i}^{4}\sum_{j}^{4}P_{ij}=1$

p_{nij}=The conditional probability that a high school graduate associated with the i^{th} socioeconomic quartile and the j^{th} achievement quartile is in full-time degree-credit undergraduate attendance during the n^{th} academic year following high school graduation. An approximation of p_{nij} may be given by:

$$p_{nij}=\alpha_{ij}n^{\beta},\ 0<p_{nij}<1,\ 0<\alpha_{ij}<1, \tag{2}$$

$$0>\beta \text{ for } n=1, 2, 3, 4$$

and:

$$p'_{nij}=\alpha'_{ij}n^{\beta'} \text{ for } n=5, 6, 7$$

Estimates of E_t are derived independently for each sex. Values of P_{ij} for each sex are based on unpublished weights from *Project Talent* for the 12th grade class of 1960.

The general form of the function described by expression (2),

$$P_n=\alpha n^{\beta} \tag{2'}$$

is known to be appropriate from census data and data obtained through a longitudinal study of 36,000 college freshmen entering 246 colleges in 1961.[1] Approximate values of β for each sex were obtained by fitting a least-squares line to the logs of Census data on the probability of college enrollment by single years of age. Approximate values of α for each sex were obtained by adjusting the Census data under a least-squares criterion to satisfy the condition,

$$\hat{E}_t=\sum_{n}^{7}p_nG_{t-n} \tag{1'}$$

where $\hat{E}_t$ and G_t represent historical time series observations of the number of full-time degree-credit undergraduates and the number of high school graduates respectively.

Approximate values for the sixteen α_{ij} are also known from *Project Talent* data and are reproduced in appendix table A-8. The 16 relatives $\frac{\alpha_{ij}}{\alpha}$ for each sex were obtained from these data and are shown in appendix table A-12. The value of β in expression (2) is assumed to be constant over all 16 socioeconomic achievement groups ij.

Given the form of function 2',

$$\frac{\alpha_{ij}}{\alpha}=\frac{p_{nij}}{p_n}$$

over all values of n.

This formulation of the model permits additional factors to be considered such as the distribution of enrollment in higher education by type of institution, by sex, achievement quartile, and socioeconomic quartile as shown in appendix table A-13; average student costs by type of institution as shown in appendix table A-14; and average family income and contribution to student cost by socioeconomic quartile as shown in appendix table A-15.

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[1] See U.S. Bureau of the Census, *Current Population Reports*, Series P-20, No. 167, table 10; also, Robert J. Panos and Alexander W. Astin, "Attrition Among College Students," unpublished papers presented at the Annual Meeting of the American Educational Research Association, New York, February 1967.

Statistical Appendix

TABLE A-1.—*Number of postsecondary institutions by type and control: 1955 and 1965*

Institutions by type	1955 [1]	1965 [2]	Change	Ratio: 1965 to 1955
All	1,858	2,230	+372	1.20
Public	655	821	+166	1.25
Private	1,203	1,409	+206	1.17
Universities	141	154	+13	1.09
Public	81	89	+8	1.10
Private	60	65	+5	1.08
Liberal arts colleges	732	815	+83	1.11
Public	82	116	+34	1.41
Private	650	699	+49	1.08
Teachers colleges	192	186	−6	.97
Public	168	158	−10	.94
Private	24	28	+4	1.17
Technological schools	44	55	+11	1.25
Public	22	26	+4	1.18
Private	22	29	+7	1.32
Theological schools: Private	124	207	+83	1.67
Other professional schools	120	134	+14	1.12
Public	10	12	+2	1.20
Private	110	122	+12	1.11
Junior colleges	[3] 505	[4] 679	+174	1.34
Public	292	420	+128	1.44
Private	213	259	+46	1.22

[1] Office of Education, National Center for Educational Statistics, *Statistics of Higher Education: 1955-56*, chap. 4, sec. 1, table V, p. 14.

[2] Office of Education, National Center for Educational Statistics, *Digest of Educational Statistics, 1966*, table 98, p. 78.

[3] Includes community colleges, technical institutes, and county teachers colleges (normal schools) offering at least 2 but fewer than 4 years of college-level work immediately beyond the high school.

[4] Includes 57 (28 public, 29 private) "technical institutes and semiprofessional schools" separately classified in 1965. These types of institutions were included, as per note 3, with junior colleges in 1955.

TABLE A-2.—*Total opening fall degree-credit enrollment by type of institution and control: 1955 to 1965*

[In thousands of students]

Item	1955	1965	Increase	Ratio 1965 to 1955
All institutions	2,660	5,570	2,910	2.02
Public	1,484	3,654	2,170	2.46
Private	1,177	1,916	739	1.63
4-year institutions	2,352	4,725	2,373	2.01
Public	1,218	2,914	1,696	2.39
Private	1,334	1,811	477	1.36
2-year institutions	308	845	537	2.74
Public	265	740	475	2.79
Private	43	105	62	2.44

Source: Office of Education, National Center for Educational Statistics, *Projections of Educational Statistics to 1975-76*, 1966, tables 4, 5, and 6, pp. 9-12 for 1955. *Opening Fall Enrollments, Higher Education, 1965*, for 1965.

TABLE A-3.—*Total opening fall degree-credit and nondegree enrollment by level and type of control: 1955 and 1965*

[In thousands of students]

Item	1955	1965	Increase	Ratio 1965 to 1955
Total	2,811	5,967	3,156	2.12
Public	1,596	4,000	2,404	2.51
Private	1,216	1,967	751	1.62
Graduate	242	582	340	2.40
Public	115	352	237	3.06
Private	127	230	103	1.81
Undergraduate and 1st professional	2,418	4,945	2,527	2.05
Public	1,369	3,273	1,904	2.39
Private	1,050	1,672	622	1.59
Nondegree	151	394	243	2.61
Public	112	345	233	3.08
Private	39	49	10	1.26

Source: Office of Education, National Center for Educational Statistics, *Projections of Educational Statistics to 1975-76*, tables 10, 11, 12, and 14, pp. 16-20, for 1955 and for 1965 graduate, undergraduate and nondegree. *Opening Fall Enrollments, Higher Education, 1965*, for total public and private in 1965. Components may not add to totals due to rounding.

TABLE A-4.—*Number of earned degrees by level and field: 1955–56 and 1965–66*

Field and level of degree	1955-56 Number (thousands)	1965-66 [1] Number (thousands)	Ratio: 1965-66 to 1955-56
All fields	379.5	683.7	1.80
Bachelor's and 1st professional	311.3	540.0	1.73
Master's (except 1st professional)	59.3	126.2	2.12
Doctor's (except 1st professional)	8.9	17.5	1.97
Natural sciences and related professions	103.0	180.3	1.75
Bachelor's and 1st professional	86.1	136.6	1.59
Master's (except 1st professional)	12.8	34.8	2.72
Doctor's (except 1st professional)	4.1	8.9	2.18
Social sciences, humanities and related professions	276.5	503.4	1.82
Bachelor's and 1st professional	225.2	403.4	1.79
Master's (except 1st professional)	46.5	91.4	1.97
Doctor's (except 1st professional)	4.8	8.6	1.78

[1] Estimated.

Source: Office of Education, NCES, *Projections of Educational Statistics to 1975-76*, tables 16-21, pp. 26-28.

TABLE A-5.—*Number of full-time, part-time, and estimated full-time equivalent professional staff employed in institutions of higher education: fall 1955 and 1965*

Position category	Staff members 1955	Staff members 1965	Increase	Ratio: 1965 to 1955
Total professional staff:				
Full-time and part-time	333,732	657,000	323,268	1.97
Full-time equivalent	236,000	465,000	229,000	1.97
Instructional staff:				
Total:				
Full-time and part-time	275,938	507,000	231,062	1.84
Full-time equivalent	195,000	359,000	164,000	1.84
For degree credit:				
Full-time and part-time	227,929	432,000	204,071	1.90
Full-time equivalent	161,000	306,000	145,000	1.90
Other instructional:				
Full-time and part-time	48,009	75,000	26,991	1.56
Full-time equivalent	34,000	53,000	19,000	1.56
Other professional staff:				
Total:				
Full-time and part-time	57,794	150,000	92,206	2.60
Full-time equivalent	41,000	106,000	65,000	2.59
Administration and services: [1]				
Full-time and part-time	30,738	71,000	40,262	2.31
Full-time equivalent	22,000	50,000	28,000	2.27
Organized research:				
Full-time and part-time	27,056	79,000	51,944	2.92
Full-time equivalent	19,000	56,000	37,000	2.95

[1] Includes professional staff for general administration, student personnel services, and libraries.

Source: OE, NCES, *Projections of Educational Statistics to 1975-76*, tables 29, 30, (pp. 53-55).

TABLE A-6.—*Revenue of institutions of higher education by type of revenue and control: Academic years 1955–56 and 1965–66*

Item	1955–56 [1]		1965–66 [2]		Ratio: 1965–66 to 1955–56
	Millions	Percent	Millions	Percent	
PRIVATE INSTITUTIONS					
Total revenue	$1,924	....	$6,136	....	3.19
Current fund revenues	1,598	100.0	5,213	100.0	3.26
Educational and general [3]	996	62.3	3,079	59.1	3.09
Organized research	236	14.8	1,110	21.3	4.70
Auxiliary enterprises	337	21.1	905	17.4	2.69
Revenue for student aid	29	1.8	118	2.3	4.07
Plant fund revenue	326	....	923	....	2.83
PUBLIC INSTITUTIONS					
Total revenue	2,531	....	9,104	....	3.60
Current fund revenues	2,031	100.0	6,976	100.0	3.43
Educational and general [3]	1,454	71.6	4,897	70.2	3.37
Organized research	196	9.7	883	12.7	4.51
Auxiliary enterprises	357	17.6	1,104	15.8	3.09
Revenue for student aid	24	1.2	92	1.3	3.83
Plant fund revenue	500	....	2,128	....	4.26

[1] Source: U.S. Department of Health, Education, and Welfare, Office of Education, *Financial Statistics of Institutions of Higher Education, 1955–56.*
[2] Estimated from a probability sample of 100 institutions which had filed financial reports by March 1967.
[3] Excluding organized research.

TABLE A-7.—*Expenditures of institutions of higher education by type of expenditure and control: Academic years 1955–56 and 1965–66*

Item	1955–56 [1]		1965–66 [2]		Ratio: 1965–66 to 1955–56
	Millions	Percent	Millions	Percent	
PRIVATE INSTITUTIONS					
Total expenditures	$1,835		$6,247		3.40
Current fund expenditures	1,504	100.0	5,325	100.0	3.54
Educational and general [3]	841	55.9	3,088	58.0	3.67
Organized research	233	15.5	1,086	20.4	4.66
Auxiliary enterprises	366	24.3	849	15.9	2.32
Student aid	64	4.3	301	5.7	4.70
Plant fund expenditures	326	100.0	856	100.0	2.63
Additions and replacements	292	89.6	758	88.6	2.60
Debt reduction	34	10.4	97	11.3	2.85
PUBLIC INSTITUTIONS					
Total expenditures	2,351		8,771		3.73
Current fund expenditures	1,879	100.0	6,668	100.0	3.55
Educational and general	1,309	69.7	4,310	64.6	3.29
Organized research	273	14.5	1,104	16.6	4.04
Auxiliary enterprises	265	14.1	1,081	16.2	4.08
Student aid	32	1.7	173	2.6	5.41
Plant fund expenditures	485	100.0	2,170	100.0	4.47
Additions and replacements	451	93.0	1,842	84.9	4.08
Debt reduction	34	7.0	328	15.1	9.65

[1] Source: U.S. Department of Health, Education, and Welfare, Office of Education, *Financial Statistics of Institutions of Higher Education, 1955–56.*

[2] Estimated from a probability sample of 100 institutions which had filed financial reports by March 1967.

[3] Excluding organized research.

TABLE A-8.—*Probability of a high school graduate entering college in the year following graduation by family socioeconomic status quartile, student achievement quartile, and sex: High school class of 1961*

Socioeconomic status quartile	Achievement quartile			
	High	Second	Third	Low
High	M .92 .87 F	M .76 .72 F	M .52 .43 F	M .38 .37 F
Second	.81 .75	.55 .44	.38 .26	.21 .09
Third	.77 .75	.45 .32	.22 .13	.17 .13
Low	.61 .42	.31 .26	.19 .13	.10 .08

Source: Tables 5-1 and 5-2 in "One Year Follow-Up Studies," *Project Talent*, American Institutes of Research, Pittsburgh, 1966, pp. 93, 94.

TABLE A-9.—*High school graduates by family socioeconomic status quartile, achievement quartile, and sex: High school class of 1960*

Socioeconomic status quartile	Achievement quartile (percent)				
	High	2d	3d	Low	Total
Males:					
High	11.2	6.1	4.7	3.0	25.0
Second	7.2	7.4	5.8	4.6	25.0
Third	4.7	6.6	7.6	6.1	25.0
Low	1.9	4.9	6.9	11.3	25.0
Total	25.0	25.0	25.0	25.0	100.0
Females:					
High	11.0	6.9	4.4	4.7	25.0
Second	7.4	6.9	6.3	4.4	25.0
Third	4.3	6.4	7.3	7.0	25.0
Low	2.3	4.8	7.0	10.9	25.0
Total	25.0	25.0	25.0	25.0	100.0

Source: Smoothed distribution based on unpublished *Project Talent* data.

TABLE A-10.—*Percentage of students entering college during the first year following high school graduation by socioeconomic status quartile and high school achievement quartile: High school class of 1961*

Status quartile	Achievement quartile				
	High	2d Q	3d Q	Low	Total
Males:					
High socioeconomic status quartile	57	25	12	6	100
Second socioeconomic status quartile	46	32	15	7	100
Third socioeconomic status quartile	40	33	16	11	100
Low socioeconomic status quartile	26	30	23	21	100
Females:					
High socioeconomic status quartile	56	28	11	5	100
Second socioeconomic status quartile	54	27	15	4	100
Third socioeconomic status quartile	48	27	13	12	100
Low socioeconomic status quartile	28	29	22	21	100

Source: Derived from Project Talent data. Implicit distribution from appendix tables A-8 and A-9.

TABLE A-11.—*Probability of full-time undergraduate degree-credit enrollment for high school graduates by number of years after high school graduation: Average 1964 to 1966*

Number of academic years after high school graduation	Probability of enrollment	
	Male	Female
First	0.34	0.30
Second	.37	.25
Third	.35	.20
Fourth	.30	.16
Fifth	.22	.07
Sixth	.16	.05
Seventh	.13	.04

Source: OPPE, based on data from the U.S. Bureau of the Census, *Current Population Reports*, Series P-20, No. 167, table 10; Robert J. Panos and Alexander W. Astin, "Attrition Among College Students," unpublished manuscript. The number of high school graduates and college enrollment by year are from National Center for Educational Statistics, *Projections of Educational Statistics to 1975-76*. See Technical Appendix for a description of estimating method.

Table A-12.—*Relative differentials in the probability of college enrollment for high school graduates by family socioeconomic status quartile and high school achievement quartile: High school class of 1961*

Status quartile	Achievement quartiles: High	2d Q	3d Q	Low
High socioeconomic status quartile	M 2.00 / 2.23 F	M 1.65 / 1.85 F	M 1.13 / 1.10 F	M 0.83 / .95 F
Secon[illegible] socioeconomic statu[illegible]	1.76 / 1.92	1.20 / 1.13	.83 / .66	.46 / .23
Third socioeconomic status quartile	1.67 / 1.92	.98 / .82	.48 / .33	.37 / .33
Low socioeconomic status quartile	1.33 / 1.08	.67 / .67	.41 / .33	.22 / .20

Source: Derived from *Project Talent* data, appendix table A-8.

Table A-13.—*Percentage of 1st-time enrollment by type of institution, student socioeconomic status quartile, high school achievement quartile, and sex*

Socioeconomic Status quartile and type of institution:	Achievement quartile: High		2d		3d		Low	
	Male	Female	Male	Female	Male	Female	Male	Female
High:								
Private 4-year institution....	0. 55	0. 50	0. 26	0. 22	0. 03	0. 03	0. 03	0. 07
Public 4-year institution.....	. 36	. 38	. 54	. 56	. 47	. 57	. 43	. 48
2-year institution...........	. 09	. 12	. 20	. 22	. 50	. 40	. 54	. 45
Total..................	1. 00	1. 00	1. 00	1. 00	1. 00	1. 00	1. 00	1. 00
Second:								
Private 4-year institution....	. 41	. 36	. 16	. 16	. 02	. 02	. 04	. 04
Public 4-year institution.....	. 46	. 48	. 57	. 59	. 45	. 48	. 40	. 41
2-year institution...........	. 13	. 16	. 27	. 25	. 53	. 50	. 56	. 55
Total..................	1. 00	1. 00	1. 00	1. 00	1. 00	1. 00	1. 00	1. 00
Third:								
Private 4-year institution....	. 30	. 25	. 10	. 08	. 01	. 01	. 02	. 01
Public 4-year institution.....	. 51	. 50	. 55	. 53	. 38	. 44	. 31	. 38
2-year institution...........	. 19	. 25	. 35	. 39	. 61	. 55	. 67	. 61
Total..................	1. 00	1. 00	1. 00	1. 00	1. 00	1. 00	1. 00	1. 00
Low:								
Private 4-year institution....	. 28	. 21	. 09	. 08	. 01	....	. 01	....
Public 4-year institution.....	. 52	. 52	. 56	. 58	. 38	. 40	. 32	. 37
2-year institution...........	. 20	. 27	. 35	. 34	. 61	. 60	. 67	. 63
Total..................	1. 00	1. 00	1. 00	1. 00	1. 00	1. 00	1. 00	1. 00

Source: OPPE, derived from the Danière study.

TABLE A-14.—*Average annual costs of attending college per full-time student by type of institution: 1966*

Item	Private 4-year	Public 4-year	2-year
Tuition and fees	$1, 168	$278	$103
Room and board	846	733	550
Books	100	100	100
Miscellaneous	450	450	350
Total	$2, 564	$1, 561	$1, 103

TABLE A-15.—*Actual annual contributions of families to college expense financing, by net income range*

Net income range	Average[1] parent contribution	Average[2] student summer earnings	Average total family contribution
0 to $2,499	0	0	0
$2,500 to $4,999	$160	0	$160
$5,000 to $7,499	330	$300	660
$7,500 to $9,999	1, 050	300	1, 350
$10,000 to $12,499	1, 660	300	1, 960
$12,500 to $14,999	2, 160	300	2, 460
$15,000 to $17,499	2, 820	300	3, 120
$17,500 to $19,999	5, 120	300	5, 420
over $20,000	5, 400	300	5, 700

[1] From James L. Bowman, and Gertrude S. Weiss, "A Proposal for Modification of the Curves of Expectations." Unpublished manuscript, p. 7, from a tabulation of parent confidential statements supplied to the College Scholarship Service.

[2] Estimated.

TABLE A-16.—*Alternative full-time degree-credit undergraduate enrollment patterns based on three different assumptions of possible trends by socioeconomic status in 1966, 1968, and 1972* [1]

[In thousands of students]

Enrollment pattern	Socioeconomic status									
	Number enrolled					Percent distribution				
	High	2d	3d	Low	Total	High	2d	3d	Low	Total
1966:										
Low	1, 938	1, 145	671	302	4, 058	47. 8	28. 2	16. 5	7. 5	100
Medium	1, 938	1, 231	744	357	4, 270	45. 4	28. 8	17. 4	8. 4	100
High	1, 938	1, 285	877	567	4, 669	41. 5	27. 6	18. 8	12. 1	100
1968:										
Low	2, 135	1, 255	726	319	4, 435	48. 1	28. 3	16. 4	7. 2	100
Medium	2, 134	1, 505	938	462	5, 039	42. 3	29. 9	18. 6	9. 2	100
High	2, 135	1, 629	1, 288	1, 012	6, 064	35. 2	26. 9	21. 2	16. 7	100
1972:										
Low	2, 452	1, 433	824	364	5, 074	48. 3	28. 3	16. 2	7. 2	100
Medium	2, 451	1, 918	1, 228	573	6, 170	39. 7	31. 1	19. 9	9. 3	100
High	2, 452	2, 095	1, 806	1, 456	7, 809	31. 4	26. 8	23. 1	18. 7	100

[1] Components may not add to totals due to rounding.

TABLE A-17.—*Alternative full-time degree-credit undergraduate enrollment patterns based on three different assumptions of possible trends by achievement level in 1966, 1968, and 1972*[1]

In thousands of students]

Enrollment pattern	Achievement level									
	Number enrolled					Percent distribution				
	High	2d	3d	Low	Total	High	2d	3d	Low	Total
1966:										
Low	2, 285	1, 095	461	219	4, 058	56. 3	37. 0	11. 3	5. 4	100
Medium	2, 343	1, 174	505	247	4, 270	54. 9	27. 5	11. 8	5. 8	100
High	2, 359	1, 290	623	397	4, 669	50. 5	27. 6	13. 4	8. 5	100
1968:										
Low	2, 517	1, 193	495	230	4, 435	56. 7	26. 9	11. 2	5. 2	100
Medium	2, 701	1, 417	616	305	5, 039	53. 6	28. 1	12. 2	6. 1	100
High	2, 768	1, 731	915	649	6, 064	45. 7	28. 5	15. 1	10. 7	100
1972:										
Low	2, 896	1, 357	560	262	5, 074	57. 1	26. 7	11. 0	5. 2	100
Medium	3, 325	1, 746	740	359	6, 170	53. 9	28. 3	12. 0	5. 8	100
High	3, 525	2, 290	1, 174	820	7, 809	45. 2	29. 3	15. 0	10. 5	100

[1] Components may not add to totals due to rounding.

TABLE A-18.—*Undergraduate student financial need and average amount per recipient extended under major student aid programs, by student family income quartile: 1966–67*

[Average amount per recipient]

Approximate family income quartile	Student financial need for full-time study (1)	Major student aid program					
		Institutional[1] (2)	Work study (3)	Educational opportunity grant (4)	Veterans benefits (5)	Student loans, NDEA (6)	Guaranteed loans (7)
High	([2])	$169	$462	$250	$990	$635	$874
Second	$728	264	571	300	990	606	828
Third	1, 171	321	600	333	990	590	811
Low	1, 477	628	1, 052	589	990	552	800
Total	([2])	400	826	433	990	588	837
Total, excluding highest income group	975	433	854	438	990	578	815

[1] Includes State and private aid administered by institutions of higher education. [2] Not Estimated.

TABLE A–19.—*Percentage distribution by source of funds for undergraduate student financial need, by student family income quartile: 1966–67*

[Percentage distribution by source]

Approximate family income quartile	Student financial need for full-time study (1)	Major student aid program: Total aid received by full-time students (2)	Institutional (3)	Work-study (4)	Educational opportunity grant (5)	Veterans benefits (6)	Student loans, NDEA (7)	Guaranteed loans (8)	Other non-Federal and personal sources (9)
High									
Second	100	31	3	1	1	10	5	11	69
Third	100	38	10	5	2	3	9	9	62
Low	100	94	33	23	7	4	15	12	6
Total excluding the highest quartile	100	47	11	7	3	6	9	11	53

TABLE A–20.—*Per capita undergraduate student financial need and source of funds, by student family income quartile: 1966–67*

[Amount per capita]

Approximate family income quartile	Number of full-time under-graduates (thousands) (1)	Student financial need for full-time study (2)	*Major student aid program*: Total aid received by full-time students (3)	Institutional[1] (4)	Work study (5)	Educational opportunity grant (6)	Veterans benefits (7)	Student loans, NDEA (8)	Guaranteed loans (9)	Other non-Federal and personal sources (10)
High	1,940	(2)	$120	$7	$3	$1	$16	$21	$72	(2)
Second	1,145	$728	226	24	7	5	71	35	84	$502
Third	671	1,171	447	115	54	27	36	107	109	724
Low	302	1,477	1,394	480	338	109	66	228	172	83
Total	4,058	(2)	299	65	37	14	39	54	89	(2)
Total excluding highest income group	2,118	975	463	118	69	27	59	85	104	513

[1] Includes State and private aid administered by institutions of higher education. [2] Not Estimated

TABLE A–21.—*Number of undergraduate students receiving student aid by major program and student family income quartile: 1966–67*

[Numbers in thousands]

Approximate family income quartile	Number of full-time undergraduates (1)	*Major student aid program*: Approximate unduplicated total number of students receiving aid (2)	Institutional[1] (3)	Work-study (4)	Educational opportunity grant (5)	Veterans benefits (6)	Student loans, NDEA (7)	Guaranteed loans (8)
High	1,940	274	83	13	4	32	63	159
Second	1,145	356	106	14	20	81	66	116
Third	671	256	240	60	54	24	122	90
Low	302	285	231	97	56	20	125	65
Total	4,058	1,171	660	184	134	157	376	430
Total excluding highest income group	2,118	897	577	171	130	125	313	271

[1] Includes State and private aid administered by institutions of higher education.

Table A-22.—*Tax-credit proposals for expenditures on tuition and books*

Ribicoff plan	Prouty plan
1. The amount of the credit is 75 percent of the first $200 of allowable expenses (tuition and fee charges plus expenditures on books); plus 25 percent of the next $300; plus 10 percent of the next $1,000.	1. The amount of the credit is 100 percent of the first $200 of allowable expenses; plus 10 percent of the next $300; plus 5 percent of the next $1,000.
2. The total amount of credit is reduced by 1 percent of the amount by which a taxpayer's adjusted gross income exceeds $25,000.	2. The total amount of credit is reduced by 2 percent of the amount by which a taxpayer's adjusted gross income exceeds $10,000.
3. The eligible amount would be reduced by the amount of grant student aid received.	3. Any excess of allowable credit over the taxpayer's tax liability is treated as an overpayment of tax, refundable in cash to the taxpayer.
	4. The eligible amount would be reduced by the amount of grant student aid received.

In effect, the proposals would cover the following expenditures by the type of college:

Average of:	*Public 4-year*	*Private 4-year*	*Public 2-year*	*Private 2-year*
Tuition and fees	$278	$1, 168	$103	$754
Books	100	100	100	100
Total	378	1, 268	203	854
Ribicoff tax credit	195	302	151	260
Prouty tax credit	217	268	200	247

Table A-23.—*Estimated benefits from Ribicoff and Prouty proposals for full-time undergraduates by family income quartile: 1966–67*

Family income quartile	Number of full-time students (thousands)	Average expenditure on tuition and books less grants received [1]	Tax credit			
			Ribicoff		Prouty	
			Average	Total (millions)	Average	Total (millions)
High [2]	1, 940	$948	$270	$524	$132	$256
Second	1, 145	876	263	301	249	285
Third	671	330	182	122	213	143
Low	302	0	0	0	0	0
Total	4, 058			947		684

[1] From table 9 column (3), reduced to exclude student living expenses and average grants received shown in appendix table A-20.

[2] All families in the upper quartile receive incomes of $10,000 or more, the mean income is estimated to be slightly more than $16,000. Thus, under the Prouty proposal the average credit is reduced by 2 percent of $6,000 or $120.

Table A-24.—*One thousand dollars taxable benefits to parents of full-time students and net after-tax benefits by income quartile*

Family income quartile	Average net after-tax benefit	Number of students (thousands)	Cost of program		
			Gross cost (millions)	Less: current grants percent (millions)	Net cost (millions)
Highest	$650	1, 940	$1, 261	$47	$1, 214
Second	800	1, 145	916	115	801
Third	840	671	564	119	445
Lowest	900	302	272	198	74
Total		4, 058	3, 013	479	2, 534

Table A-25.—*Estimated cost of federal scholarships to cover the difference between college costs and college scholarship service standards for family contributions:*[1] *1966–67*

Family income quartile	Number of full-time undergraduates (thousands)	Average scholarship required	Cost of scholarships: Gross cost (millions)	Cost of scholarships: Less: current grants (millions)	Cost of scholarships: Net cost (millions)
High	1,940	(2)	(2)	$47	(2)
Second	1,145	$728	$834	115	$719
Third	671	1,171	786	119	667
Low	302	1,477	446	198	248
Total	4,058	(2)	2,066	479	1,639

[1] See also tables 9 and 10.

[2] Not estimated.

Table A-26.—*Percentage of undergraduate student aid funds extended under major student aid programs by student family income quartile: 1966–67*

Percentage distribution by major program

Approximate family income quartile	Total aid received by full-time students (1)	Institutional (2)	Work study (3)	Educational opportunity grants (4)	Veterans benefits (5)	Student loans, NDEA (6)	Guaranteed loans (7)
High	100	6	3	—	14	17	60
Second	100	11	3	2	32	15	37
Third	100	26	12	6	8	24	24
Low	100	35	24	8	5	16	12
Total	100	22	13	5	13	17	30

Table A-27.—*Full-time undergraduates, potential additional students, and additional student aid required, 1966–67*

Family income quartile	Undergraduate students enrolled full-time (thousands)	Potential additional full-time students[1] (thousands)	Average financial need	Cost of additional full-time students (Millions)
High	1,940	(2)	(2)	(2)
Second	1,145	360	$728	$262
Third	671	300	1,171	351
Low	302	135	1,477	199
Total	4,058	795	.....	812

[1] Assumptions described in text, page 22.

[2] Not estimated.

Table A-28.—*Adjusted per capita undergraduate student financial need and funds extended under major student aid programs, by student family income quartile: 1966–67*

[Dollars per capita]

Approximate family income quartile	Student financial need for full-time study (1)	Major student aid program: Institutional[1] (2)	Major student aid program: Work study (3)	Major student aid program: Educational opportunity Grants (4)	Major student aid program: Veterans benefits (5)	Major student aid program: Student loans, NDEA (6)	Major student aid program: Guaranteed loans (7)	Other non-Federal and personal sources (8)
High	(2)	$7	$3	$1	$16	$21	$72	(2)
Second	$728	24	[3] 338	5	71	[3] 228	[3] 172	0
Third	1,171	115	[3] 338	27	36	[3] 228	[3] 172	$255
Low	1,477	480	338	109	66	228	172	84

[1] Includes State and private aid administered by institutions of higher education.

[2] Not estimated.

[3] Set equal to the amounts shown for the low income quartile.

TABLE A-29.—*Differences in median income between persons with college training and persons with four years of high school only by age, sex, and level of college training: 1965*

[All persons with or without income]

Age	1-3 Years of college		4 Years of college	
	Male (difference)	Female (difference)	Male (difference)	Female (difference)
25 to 34.......	$408	$263	$1, 371	$1, 332
35 to 44.......	1, 067	0	3, 031	504
45 to 54.......	1, 788	142	4, 587	1, 366
55 to 64.......	194	0	2, 433	1, 914

Source: U.S. Bureau of the Census, *Current Population Reports*, P-60, No. 51; and U.S. Department of Labor, *Special Labor Force Report*, No. 65, March 1965.

TABLE A-30.—*Graduate student stipends, by source of funds: 1963-64 and 1966-67*

[Amounts in millions]

Type of stipend	Source		
	Total	Federal	Non-Federal
1963-64:			
Total..............	$394. 4	$230. 2	$164. 2
Fellowships and scholarships.................	162. 4	157. 5	4. 9
Research assistantships...	77. 4	72. 7	4. 7
Teaching assistantships...	102. 7	....	102. 7
Faculty appointment....	51. 9	....	51. 9
1966-67:			
Total..............	612. 7	386. 4	226. 3
Fellowships and scholarships.................	300. 9	295. 9	5. 0
Research assistantships...	95. 5	90. 5	5. 0
Teaching assistantships...	143. 6	....	143. 6
Faculty appointment....	72. 7	....	72. 7

Source: OPPE estimates based on agency fiscal reports, NORC and BSSR studies on sources of student stipends, and agency estimates of research assistantships from R&D funds.

TABLE A-31.—*Stipends required to induce part-time graduate students to attend school full-time (1963)*

Stipend and level of support	Percent of total respondents
Tuition scholarship.........................	1
Tuition scholarship plus $500 stipend with no obligations.........................	1
Tuition scholarship plus $1,000 stipend with no obligations.........................	4
Tuition scholarship plus $2,000 stipend with no obligations.........................	14
Tuition scholarship plus $3,000 stipend with no obligations.........................	14
Tuition scholarship plus $4,000 stipend with no obligations.........................	22
None of the above..........................	44

Source: *Graduate Student Finances*, 1963. National Opinion Research Center, University of Chicago, September 1965, p. 113.

TABLE A-32.—*Behavior of graduate students and availability of stipends*

A. 1963 follow-up of 1961 graduates (men and women)

Field of study	Percent B.A.'s enrolled full-time	Percent full-time holding stipends	Percent part-time holding stipends	Percent all students holding stipends	Mean value of stipend	Percent stipends duty-free	Percent enrolled within 1 year for next highest degree
Life sciences..........	72	89	62	80	$2, 700	39	61
Physical sciences......	61	88	54	74	2, 646	35	68
Behaviorial sciences...	55	83	48	63	2, 350	41	66
Engineering..........	40	77	42	46	2, 200	n.a.	57
Humanities..........	50	64	32	46	2, 000	39	58

B. Five years after the college degree (males)

Field of study	Percent enrolled full time	Percent holding stipends	Percent degree recipients	Percent candidate for degree
Natural sciences..................	58. 4	55. 5	35. 6	18. 4
Engineering......................	41. 1	46. 0	16. 5	12. 3
Social sciences....................	45. 0	36. 2	29. 1	20. 6
Humanities and arts...............	38. 8	50. 0	18. 9	25. 8
Health..........................	85. 7	n.a.	18. 4	8. 3
Agriculture......................	38. 9	....	31. 2	16. 9
Business and commerce............	36. 4	10. 0	6. 2	6. 9
Education........................	19. 7	17. 1	15. 7	5. 7
Other...........................	73. 0	21. 7	3. 3	6. 6
Unknown........................	44. 2	....	....	....

Source: *Five Years After the College Degree, Part I.* Bureau of Social Science Research, Inc., Washington, D.C., 1965.

Table A-33.—*Time lapse between baccalaureate and doctorate degrees in 10 fields: Mean number of years and standard deviations for each decade 1920–1960*

Period	Math	Physics	Chemistry	Geophysical sciences	Engineering	Total physical sciences	Biological sciences	Total natural sciences	Psychology	Social science (other than Psychology)	Arts and professions	Education	Social science, arts and professions and Education	Grand total
1920–1929:														
Number	337	632	1, 902	326	219	3, 416	2, 257	5, 673	618	1, 837	2, 105	1, 064	5, 624	11, 297
Mean	8. 1	7. 4	6. 2	7. 8	6. 9	6. 8	8. 1	7. 3	8. 5	8. 8	9. 5	11. 3	9. 5	8. 4
S.D.	4. 7	4. 3	3. 7	4. 9	4. 6	4. 2	4. 6	4. 4	5. 0	4. 7	5. 4	5. 4	5. 2	4. 9
1930–1939:														
Number	774	1, 305	3, 917	604	780	7, 380	5, 006	12, 386	1, 116	3, 816	4, 633	2, 995	12, 560	24, 946
Mean	7. 7	7. 1	6. 2	7. 8	7. 4	6. 8	7. 9	7. 2	8. 2	9. 9	10. 2	13. 8	10. 8	9. 0
S.D.	4. 9	4. 1	3. 8	4. 6	4. 9	4. 2	4. 6	4. 4	5. 2	5. 4	5. 8	6. 5	6. 1	5. 6
1940–1949:														
Number	829	1, 469	5, 309	563	1, 406	9, 576	5, 853	15, 429	1, 233	4, 197	4, 755	4, 676	14, 861	30, 290
Mean	8. 3	7. 5	6. 3	8. 9	8. 1	7. 1	8. 5	7. 6	9. 0	11. 1	11. 6	15. 2	12. 4	10. 0
S.D.	4. 9	3. 9	3. 5	4. 3	4. 3	3. 9	4. 6	4. 2	5. 2	5. 8	6. 2	6. 3	6. 4	5. 9
1950–1959:														
Number	2, 317	4, 962	10, 221	1, 700	5, 923	25, 123	14, 880	40, 003	6, 403	11, 120	11, 098	13, 946	42, 567	82, 570
Mean	8. 3	7. 4	6. 6	8. 1	8. 1	7. 4	8. 3	7. 7	8. 5	10. 8	12. 0	15. 2	12. 2	10. 0
S.D.	4. 8	3. 6	3. 5	4. 6	4. 2	4. 0	4. 6	4. 2	5. 1	5. 9	6. 4	6. 9	6. 7	6. 1
1960–1961:														
Number	643	1, 160	2, 231	506	1, 826	6, 366	3, 563	9, 929	1, 622	2, 681	2, 984	3, 418	10, 705	20, 634
Mean	8. 5	7. 6	7. 0	8. 6	8. 3	7. 8	8. 9	8. 2	9. 4	11. 0	12. 0	15. 2	12. 4	10. 3
S.D.	4. 8	3. 4	3. 5	4. 5	4. 4	4. 0	4. 4	4. 2	5. 2	5. 9	6. 3	7. 1	6. 7	6. 0
1920–1961:														
Number	4, 900	9, 528	23, 580	3, 699	10, 154	51, 861	31, 559	83, 420	10. 992	23, 651	25, 575	26, 099	86, 317	169, 737
Mean	8. 2	7. 4	6. 5	8. 2	8. 0	7. 2	8. 3	7. 6	8. 7	10. 6	11. 4	14. 9	11. 9	9. 8
S.D.	4. 8	3. 7	3. 6	4. 6	4. 3	4. 0	4. 6	4. 3	5. 2	5. 7	6. 2	6. 8	6. 5	5. 9

Source: L.R. Harmon, et al, ***Doctorate Production in the United States 1920-1962***, National Academy of Sciences, National Research Council, Washington, D.C., 1963, p. 40.

TABLE A–34.—*Number of NDEA fellowship awards by year of award, period awarded, and attainment of Ph. D. status* [1]

Year of award	Period of fellowship award														
	3-year NDEA grants					2-year NDEA grants					1-year NDEA grants				
	Total Number of awards	Awardees who received Ph.D.		Awardees who did not receive Ph.D.		Total Number of awards	Awardees who received Ph.D.		Awardees who did not receive Ph.D.		Total Number of awards	Awardees who received Ph.D.		Awardees who did not receive Ph.D.	
		Number	Percent	Number	Percent		Number	Percent	Number	Percent		Number	Percent	Number	Percent
1959–60...	1,000	373	37.3	627	62.7	0	0	0	0	0	0	0	0	0	0
1960–61...	1,432	512	35.8	920	64.2	54	36	66.7	18	33.3	8	5	62.5	3	37.5
1961–62...	1,392	402	28.9	990	71.1	101	53	52.5	48	47.5	6	1	16.7	5	83.3
1962–63...	1,382	236	17.1	1146	82.9	113	48	42.5	65	57.5	5	2	40.0	3	60.0
Total....	5,206	1,523	29.3	3,683	70.7	268	137	51.1	131	48.9	19	8	42.1	11	57.9

Source: Unpublished data provided by the Bureau of Social Science Research in conjunction with an OE contract to evaluate the NDEA Title IV Fellowship Program.

[1] Based on fellowship holders for whom complete data was available.

TABLE A–35.—*Earned degrees, by type: percentage distribution 1920 to 1970*

Year	Percent distribution		
	Bachelor's and 1st professional	Master's	Ph.D. and equivalent
1921–30................................	89.1	9.6	1.3
1931–40................................	86.6	11.8	1.6
1941–50................................	86.7	11.9	1.4
1951–60................................	82.4	15.5	2.1
1961–65................................	81.1	16.6	2.3
1966–70................................	79.9	17.5	2.6
1971–75................................	80.4	17.1	2.5

Source: U.S. Office of Education, National Center for Educational Statistics.

TABLE A–36.—*Assignable area and funds disbursed under The Higher Education Facilities Act of 1963 by type of institution: Fiscal years 1965 and 1966*

Type of institution	Instructional space [1]		Funds disbursed							
			Total		Title I		Title II		Title III	
	Area	Percent	Million	Percent	Million	Percent	Million	Percent	Million	Percent
Total......................	165.8	100.0	$959	100.0	$657	100.0	$139	100.0	$165	100.0
Universities......................	70.3	42.4	372	38.8	203	30.9	124	89.2	45	27.2
Liberal arts colleges...............	47.0	28.3	309	32.2	218	33.2	7	5.0	84	50.9
Teachers' colleges................	18.2	11.0	76	7.9	66	10.0	1	.7	9	5.5
Technological schools..............	6.4	3.9	27	2.8	21	3.2	6	4.3	1	.6
Theological schools [2]...............	1.6	1.0	4	.4	3	.5	0	0	1	.6
Other professional schools..........	7.3	4.4	24	2.5	6	.9	([3])	.1	18	9.01
Junior colleges and technical institutes......................	15.0	9.0	147	15.3	139	21.8	0	0	8	8.4

[1] Assignable area in millions of square feet, 1957.

[2] Funds for liberal arts facilities only.

[3] $0.2 million or less.

TABLE A–37.—*Assignable area and funds disbursed under The Higher Education Facilities Act of 1963 by control and tybe of institution: Fiscal years 1965 and 1966*

Type of institution	Instructional space[1]		Funds disbursed							
			Total		Title I		Title II		Title III	
	Area	Percent	Million	Percent	Million	Percent	Million	Percent	Million	Percent
Public total	97.6	100.0	$547	100.0	$438	100.0	$81	100.0	$27	100.0
Universities	49.0	50.2	250	45.7	162	37.0	75	92.6	12	44.4
Liberal arts colleges	12.6	12.9	85	15.5	80	18.3	2	2.5	3	11.1
Teachers' colleges	17.6	18.0	75	13.7	65	14.8	1	1.2	9	33.3
Technological schools	3.5	3.6	13	2.4	10	2.3	3	3.7	0	0
Theological schools[2]										
Other professional schools	3.6	3.7	(3)	0.2	(3)	0.2	0	0	0	0
Junior colleges and technical institutes	11.3	11.6	123	22.5	120	27.4	0	0	3	11.1
Private total	68.2	100.0	415	100.0	219	100.0	57	100.0	138	100.0
Universities	21.2	31.0	122	29.4	41	18.7	49	85.9	33	23.9
Liberal arts colleges	34.4	50.4	225	54.2	138	63.0	6	10.5	80	58.0
Teachers' colleges	.6	0.9	1	.2	1	.6	0	0	0	0
Technological schools[2]	3.0	4.4	14	3.4	11	5.0	2	3.5	1	.7
Theological schools	1.6	2.3	4	1.0	3	1.4	0	0	1	.7
Other professional schools	3.7	5.4	24	5.8	6	2.7	(3)	.1	18	13.0
Junior colleges and technical institutes	3.7	5.4	25	6.0	19	8.7	0	0	5	3.6

[1] Assignable area in millions of square feet, 1957.

[2] Funds for liberal arts facilities only.

[3] $0.2 million or less.

TABLE A–38.—*Number of institutions, full-time equivalent enrollment, and funds disbursed under titles I and II of The Higher Education Facilities Act of 1963 by size of institution: Fiscal years 1965 and 1966*

Size of institution	Number of institutions	Full-time equivalent enrollment		Funds disbursed	
		Number (thousands)	Percent	Amount in millions	Percent
Below 200	63	2	0.1	$48.1	6.0
200 to 499	102	38	1.2	28.0	3.5
500 to 999	216	160	5.2	80.2	10.1
1,000 to 2,499	284	438	14.2	155.7	19.6
2,500 to 4,999	134	488	15.9	123.2	15.5
5,000 to 9,999	114	758	24.6	163.4	20.5
10,000 to 19,999	60	825	26.8	159.3	20.0
20,000 plus	13	369	12.0	38.1	4.8
Total	986	3,078	100.0	796.0	100.0

TABLE A-39.—*Approvals and disapprovals under title III, HEA, by character of school*

[Number of institutions]

Expenditure	1966		1967	
	Approved	Disapproved	Approved	Disapproved
Per student expenditures:				
Under $1,000:				
White	37	62	210	62
Negro	21	12	64	6
Over $1,000:				
White	52	49	109	79
Negro	17	12	28	0
Total:				
White	89	111	319	141
Negro	38	24	92	6

NOTE.—Based on 25 percent sample for approvals, and 16 percent sample for disapprovals.

TABLE A-40.—*Summary of fiscal year 1966 and fiscal year 1967 activity under title III of The Higher Education Act of 1965*

Fiscal year	Appropriated (Millions)	Requested (Millions)	Number of developing institutions requesting	Number of developing institutions receiving awards		Awards for—			
						Cooperative programs			
				4-year Institutions	2-year Institutions	4-year		2-year	
						Number	Amount (Millions)	Number	Amount (Millions)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1966	$5.0	$32.0	262	96	31	116	$2.8	48	$0.3
1967	30.0	53.0	558	288	123	380	15.3	135	3.3

Fiscal year	Awards for—				Cooperating higher education institutions (Number)	Cooperating business concerns (Number)	Average grant (Dollars)
	National teaching fellowships						
	4-year		2-year				
	Number	Amount (Millions)	Number	Amount (Millions)			
	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1966	40	$1.1	59	$0.8	66	9	$39, 370
1967	1, 088	8.1	435	3.3	233	60	72, 933

NOTE.—Geographical coverage of awards:
1966-38 States, plus District of Columbia.
1967—47 States, plus District of Columbia, Puerto Rico and Guam.

Source: Office of Education, Bureau of Higher Education.

TABLE A-41.—*Number of developing institutions, number of students, and funds disbursed under title III of The Higher Education Act of 1965 by type of institution, expenditure per student, and tuition: Fiscal year 1966*

Expenditure	Total			Predominately white			Predominately Negro		
	Number of institutions	Number of students	Title III disbursements (thousands)	Number of institutions	Number of students	Title III disbursements (thousands)	Number of institutions	Number of students	Title III disbursements (thousands)
Total	127	98, 090	$4, 990	89	56–599	$2, 307	38	41, 491	$2, 683
Expenditure per student—$1,000 or more	58	40, 314	2, 729	37	14, 370	1, 060	21	25, 944	1, 669
Tuition:									
$1,200 or more	8	3, 407	246	8	3, 407	246			
$400 to $1,199	42	19, 056	1, 980	29	10, 963	814	13	8, 093	1, 166
Under $400	8	17, 851	503				8	17, 851	503
Expenditure per student—Under $1,000	69	57, 776	2, 261	52	42, 229	1, 247	17	15, 547	1, 014
Tuition:									
$1,200 or more									
$400 to $1,199	33	18, 700	1, 422	20	12, 226	486	13	6, 474	936
Under $400	36	39, 076	839	32	30, 003	761	4	9, 073	78
Percent distribution									
Total	100. 0	100. 0	100. 0	100 . 0	100. 0	100. 0	100. 0	100. 0	100. 0
Expenditure per student—$1,000 or more	45. 7	41. 1	54. 7	41. 6	25. 4	45. 9	55. 3	62. 5	62. 2
Tuition:									
$1,200 or more	6. 3	3. 5	4. 9	9. 0	6. 0	10. 7			
$400 to $1,199	33. 1	19. 4	39. 7	32. 6	19. 4	35. 3	34. 2	19. 5	43. 5
Under $400	6. 3	18. 2	10. 1				21. 1	43. 0	18. 7
Expenditure per student—Under $1,000	54. 3	58. 9	45. 3	58. 4	74. 6	54. 1	44. 7	37. 5	37. 8
Tuition:									
$1,200 or more									
$400 to $1,199	26. 0	19. 1	28. 5	22. 5	21. 6	21. 1	34. 2	15. 6	34. 9
Under $400	28. 3	39. 8	16. 8	35. 9	53. 0	33. 0	10. 5	21. 9	2. 9

Source: Based on a 25 percent sample of institutions receiving grants.

TABLE A-42.—*Number of developing institutions, number of students, and funds disbursed under title III of The Higher Education Act of 1965 by type of institution, expenditure per student, and tuition: Fiscal year 1967*

Expenditure	Total			Predominately white			Predominately Negro		
	Number of institutions	Number of students	Title III disbursements (thousands)	Number of institutions	Number of students	Title III disbursements (thousands)	Number of institutions	Number of students	Title III disbursements (thousands)
Total	411	381, 894	$29, 998	319	277, 106	$15, 187	92	104, 788	$14, 811
Expenditure per student— $1,000 or more	137	100, 425	9, 971	109	68, 517	5, 432	28	31, 908	4, 539
Tuition:									
$1,200 or more	8	5, 724	491	8	5, 724	491			
$400 to $1,199	107	66, 466	6, 275	91	56, 786	3, 982	16	9, 680	2, 293
Under $400	22	28, 235	3, 205	10	6, 007	959	12	22, 228	2, 246
Expenditure per student— Under $1,000	274	281, 469	20, 027	210	208, 589	9, 755	64	72, 880	10, 272
Tuition:									
$1,200 or more									
$400 to $1,199	145	118, 174	9, 698	101	85, 430	3, 778	44	32, 744	5, 920
Under $400	129	163, 295	10, 329	109	123, 159	5, 977	20	40, 136	4, 352
				Percent distribution					
Total	100. 0	100. 0	100. 0	100. 0	100. 0	100. 0	100. 0	100. 0	100. 0
Expenditure per student— $1,000 or more	33. 3	26. 3	33. 2	34. 2	24. 8	35. 8	30. 4	30. 5	30. 6
Tuition:									
$1,200 or more	1. 9	1. 5	1. 6	2. 5	2. 1	3. 2			
$400 to $1,199	26. 0	17. 4	20. 9	28. 5	20. 5	26. 3	17. 4	9. 3	15. 5
Under $400	5. 4	7. 4	10. 7	3. 2	2. 2	6. 3	13. 0	21. 2	15. 1
Expenditure per student— Under $1,000	66. 7	73. 7	66. 8	65. 8	75. 2	64. 2	69. 6	69. 5	69. 4
Tuition:									
$1,200 or more									
$400 to $1,199	35. 3	30. 9	32. 4	31. 6	30. 8	24. 9	47. 9	31. 2	40. 0
Under $400	31. 4	42. 8	34. 4	34. 2	44. 4	39. 3	21. 7	38. 3	29. 4

Source: Based on a 25 percent sample of institutions receiving grants.

TABLE A–43.—*Per capita undergraduate student financial need and funds extended under major student aid programs, by student family income quartile: 1968–69 medium projection*

[Dollars per capita]

Approximate family income quartile	Number of full-time under-graduates (thousands) (1)	Student financial need for full-time study (2)	Major student aid program							Other non-Federal and personal sources (10)
			Total aid received by full-time students (3)	Institu-tional (4)	Work study (5)	Educational opportunity grants (6)	Veterans benefits (7)	Student loans, NDEA (8)	Guar-anteed loans (9)	
High	$2,134	(1)	$129	$6	$3	....	$30	$20	$70	(1)
Second	1,505	$738	368	22	6	$27	108	35	170	$370
Third	938	1,207	882	101	50	310	51	200	170	325
Low	462	1,528	1,528	427	315	309	87	220	170	0
Total	5,039	585	469	67	41	94	62	77	128	116

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(1) Not estimated.

TABLE A–44.—*Per capita undergraduate student financial need and funds extended under major student aid programs, by student family income quartile: 1972–73 medium projection*

[Dollars per capita]

Approximate family income quartile	Number of full-time under-graduates (thousands) (1)	Student financial need for full-time study (2)	Major student aid program							Other non-Federal and personal sources (10)
			Total aid received by full-time students (3)	Institu-tional (4)	Work study (5)	Educational opportunity grants (6)	Veterans benefits (7)	Student loans, NDEA (8)	Guar-anteed loans (9)	
High	2,451	(1)	$141	$6	$3	....	$26	$20	$86	(1)
Second	1,918	$803	393	22	6	$76	84	35	170	$410
Third	1,228	1,322	957	101	50	397	39	200	170	365
Low	573	1,623	1,623	427	315	421	70	220	170	0
Total	6,170	663	516	69	39	142	51	79	136	147

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(1) Not estimated.

TABLE A–45.—*Undergraduate student financial need and funds extended under major student aid programs by student family income quartile: 1968–69 medium projection*

[Dollars in millions]

Approximate family income quartile	Student financial need for full-time study (1)	Major student aid program						
		Total aid received by full-time students (2)	Institutional (3)	Work study (4)	Educational opportunity grants (5)	Veterans benefits (6)	Student loans, NDEA (7)	Guaranteed loans (8)
High	(1)	$275	$13	$6	....	$64	$43	$149
Second	$1,110	554	33	9	$41	162	53	256
Third	1,132	828	95	47	291	48	188	159
Low	706	707	197	146	143	40	102	79
Total	9,779	2,364	338	208	475	314	386	643

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(1) Not estimated.

TABLE A-46.—*Undergraduate student financial need and funds extended under major student aid programs by student family income quartile: 1972–73 medium projection*

[Dollars in millions]

Approximate family income quartile	Student financial need for full-time study	Major student aid program						
		Total aid received by full-time students	Institutional	Work study	Educational opportunity grants	Veterans benefits	Student loans, NDEA	Guaranteed loans
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High	(1)	$345	$15	$7	....	$64	$49	$210
Second	$1,540	755	42	12	$146	162	67	326
Third	1,623	1,176	124	61	488	48	246	209
Low	930	929	245	180	241	40	126	97
Total	4,093	3,206	426	260	875	314	488	842

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[1] Not estimated.

TABLE A-47.—*Per capita undergraduate student financial need and funds extended under major student aid programs by student family income quartile: 1968–69 maintenance of effort*

[Dollars per capita]

Approximate family income quartile	Number of full-time under-graduates (thousands)	Student financial need for full-time study	Major student aid program							Other non-Federal and personal sources
			Total aid received by full-time students	Institutional	Work study	Educational opportunity grants	Veterans benefits	Student loans, NDEA	Guaranteed loans	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
High	2,135	(1)	$129	$6	$3	....	$30	$20	$70	(1)
Second	1,380	$746	350	22	6	....	117	35	170	$396
Third	832	1,214	649	101	50	$70	58	200	170	565
Low	391	1,529	1,456	427	315	222	102	220	170	73
Total	4,737	557	394	62	38	31	66	72	125	163

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[1] Not estimated.

TABLE A-48.—*Per capita undergraduate student financial need and funds extended under major student aid programs by student family income quartile: 1972–73 maintenance of effort*

[Dollars per capita]

Approximate family income quartile	Number of full-time under-graduates (thousands)	Student financial need for full-time study	Major student aid program							Other non-Federal and personal sources
			Total aid received by full-time students	Institutional	Work study	Educational opportunity grants	Veterans benefits	Student loans, NDEA	Guaranteed loans	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
High	2,452	(1)	$141	$6	$3	....	$26	$20	$86	(1)
Second	1,676	$807	330	22	6	....	97	35	170	$477
Third	1,026	1,318	753	101	50	$185	47	200	170	565
Low	468	1,618	1,545	427	315	328	85	220	170	73
Total	5,622	616	425	63	38	61	56	74	133	191

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[1] Not estimated.

TABLE A-49.—*Undergraduate student financial need and funds extended under major student aid programs by student family income quartile: 1968–1969 maintenance of effort*

[Dollars in millions]

Approximate family income quartile	Student financial need for full-time study (1)	Major student aid program						
		Total aid received by full-time students (2)	Institutional (3)	Work study (4)	Educational opportunity grants (5)	Veterans benefits (6)	Student loans, NDEA (7)	Guaranteed loans (8)
High	([1])	$275	$13	$6		$64	$43	$149
Second	$1,030	483	30	8		162	48	235
Third	1,010	523	84	42	$58	48	166	141
Low	598	569	167	123	87	40	86	66
Total	2,638	1,850	294	179	145	314	343	591

[1] Not estimated.

TABLE A-50.—*Undergraduate student financial need and funds extended under major student aid programs by student family income quartile: 1972–73 maintenance of effort*

[Dollars in millions]

Approximate family income quartile	Student financial need for full-time study (1)	Major student aid program						
		Total aid received by full-time students (2)	Institutional (3)	Work-study (4)	Educational opportunity grants (5)	Veterans benefits (6)	Student loans, NDEA (7)	Guaranteed loans (8)
High	([1])	$345	$15	$7		$64	$49	$210
Second	$1,352	553	37	10		162	59	285
Third	1,352	634	104	51	$190	48	205	174
Low	757	723	200	147	153	40	103	80
Total	3,461	2,255	356	215	343	314	416	749

[1] Not estimated.

TABLE A-51.—*Graduate student support requirements*

[In millions of dollars]

Graduate student financing	1966	1969	1973
Total	704	980	1330
Subtotal, non-federal	227	357	467
Non-federal fellowships	5	5	5
Research assistantships	5	6	7
Teaching assistantships	144	230	302
Faculty appointments	73	116	153
Subtotal, Federal	477	623	863
Veterans Administration	102	204	204
Office of Education (total)	140	179	247
National defense student loan	36	50	64
Guaranteed loans	49	70	100
College work study	7	9	13
Other Office of Education	50	50	80
Other Federal	235	240	412

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